

# COMMODORE USER

Incorporating Vic Computing

January 1985 Price 95p





# Choosing a printer is a lot easier than choosing a computer.

**T**HERE are dozens of quality printers from which to choose. With quality price tags of around £250.

The Brother M-1009, however, breaks all the rules.

**Stays defiantly below the £200 barrier.**

Though it has far more than its fair share of features, it maintains the extraordinarily low price of £199.95.

**Travels at a steady fifty.**

In the speed stakes, the M-1009 is certainly no slouch, being fully capable of up to 50 characters per second.

Providing bi-directional and logic seeking printing for normal characters and uni-directional printing for super and sub script and graphics.

**Prints on any paper.**

Being an impact printer, the M-1009 will print on virtually any paper, including letter headings, invoices and standard office stationery.

It will even print two copies together with your original.

**A superb character recommendation.**

In its price range, the M-1009 has a great deal more character than many printers.

96 no less, plus international type and graphic characters.

**Reliability comes as standard.**

Built to the same exacting standards as Brother's elite office

printers, the Brother M-1009 already has faultless credentials for reliability.

Its 9 pin dot matrix head, for example, has an astonishing 90 million character service life.

**One printer that doesn't block out the light.**

Many home computers tend to be a little on the large side.

In contrast, the compact M-1009, at only 7 cm high, keeps a discreet profile.

Well designed, reliable – and conscientious.

The Brother M-1009.



**The future at your fingertips.**

DEPT F BROTHER OFFICE EQUIPMENT DIVISION JONES & BROTHER, 141 FLY STREET,  
GLIDE BRIDGE, ALDERMANHOV MANCHESTER M4 3JD  
TEL: 041 330 6538 (10 LINES) 041 330 0951 (4 LINES) 041 330 3364 (4 LINES) TELEX: 648191  
BROTHER INDUSTRIES LIMITED, NAGOYA, JAPAN

— AVAILABLE FROM —

BUKAY, WARDINGS SPECTRUM, JOHN MENZIES, MICRO MANAGEMENT  
MAJOR DEPARTMENT STORES AND ALL GOOD COMPUTER SHOPS

# Make new friends,



Like Dr. Frankenstein, you can now create your very own monsters and aliens. As well as friends and heroes to defeat them.

You can also invent your own games. As simple or as complex as you care to make them. The only real limit is your imagination.

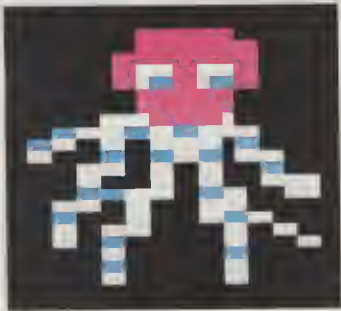
## GAMES CREATOR

For the C64/65 the Games Creator comes with a step-by-step manual and three ready-to-play games. Each demonstrates some of the program's exceptional features: shapes, movement, speed, scrolling backgrounds, scoring, music, sound effects and many more.

And you don't have to know any program language to work it! There's only one thing better than playing games. And that's inventing them. £12.95



# and enemies.



## GO-SPRITE

A versatile, easy-to-use sprite designer and tester which makes full use of the facilities on the Commodore 64. Go-Sprite gives you:

- ease of use with icon driven commands
- simple animation of 32 sprites, with 255 frames
- easy handling of multi-coloured sprites
- overlays of up to seven layers

User-friendly Go-Sprite can be operated almost entirely by joystick alone. Lightpen and keyboard control options also included. Speedy loading program. £9.95



**MICROSOFT**

SOFTWARE FOR ALL THE FAMILY.

Available from Boots, W.H. Smith, Spectrum and all good software stockists. Write for a free catalogue to Microsoft, Holborn Circus, London, EC1P 1DQ.



# ASSEMBLER-DISASSEMBLER FOR YOUR CBM 64

FASSEM 64 is the fastest machine language assembler of it's kind available

FACILITIES: • Assemble • Disassemble • Disk Commands  
• Mixed number bases (Hex, Decimal and Binary) - and conversions between them!  
• User "helpful" utilities (including Renumber, Auto, Delete)

**THE FAST ONE**

**2 1/2 times faster than it's nearest rival.**



CASSETTE  
• £14.95



COMMUNITY 64

\* Also available on disk or cartridge please phone your order direct to:

BUSINESS & TECHNOLOGY CENTRE BESSEMER DRIVE STEVENAGE HERTS  
SG1 2DX PHDNE (0438) 316561



# COMMODORE USER

## Contents

### News

The latest news and views to keep you in touch with what's happening in the world of Commodore

8



### Ank Competition

Win the thinking person's game: 25 copies of Ank, the unique abstract computer puzzle, must be won in our absorbing competition

### Letter from America

US Commodore watcher, Dan Gorman files another report. This month he looks at some new software about frogs - Frogger was never like this

16



### Whichnet?

#### Micronet 800 and Compunet - which one to choose?

The Commodore 64 is probably the only home computer to have a choice of two communications networks. Both Compunet and Micronet 800 are jostling for position to get you hooked into the outside world. Which one should you choose?

### Good vibes from SID Now to get a 'vibrato' effect

This month, Tom Jeffries has been teaching Sydney Sawmood and the rest of the band how to program the vibrato effect you get from musical instruments and making country singers

28



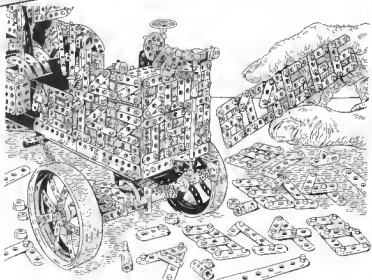
### Going into Assembly Four Commodore 64 assemblers reviewed

Time to round up the assemblers currently available for the Commodore 64. Ken Ryder and Dermot Williams have been putting through their paces Autoprog's Monitor, Honeyfold's Doctor Watson package, Interceptor's Assembler 64 and Zeus 64

*People*

**Editor** Eugene Lacey  
**Deputy Editor** Robdan Juciak  
**Staff Writer** Mike Panedee  
**Design/Production** Lynda Skerry  
**Contributors** Chris Durham  
John Kinsley  
Dan Gorman  
Fred Ford  
Tom Jeffries  
**Advertising Manager** Julie Madigan  
**Advertising Executive** Julia West  
**Advertising copy control** Josephine Collins  
**Publisher** Rita Lewis  
**Registered Offices:**  
Prory Court,  
20 St. Fargington Lane  
London EC1R 3AU  
1984 An EMAP Publication

**Editorial and Advertising**  
01-351 6223  
**Subscriptions Back Issues**  
0739 351215



## Top of the Form Educational software for youngsters



With its large memory, good graphics and sound, the Commodore 64 is a particularly good computer to use for educating youngsters. More and more software houses are releasing educational games, but will they really help teach your kids - and are they fun? Ken Young looks at the educational market and assesses what's currently available for the 64.



## No Dice - board games for the 64

If the latest arcade and adventure games can't dispel your longing for old favourites like chess, Monopoly and Scrabble, you'll be pleased to know that a range of board-game software is available for the 64. But is it as good?

## Charts

The ups and downs, and ins and outs of the 64 software world



## Screen Scene

The most up-to-date games reviews for your Commodore computer

## Virtuals for Vic and 64

This month's offerings include a music program for the 64, 'Ureks' for the Vic - and a whole lot more



## Book look

This month our regular book page looks at books on the 1541 disk drive

## User-Friendly Design

Chris Preston concludes his series on better programming



## STAB in the back for Basic Introducing the STAB language

Professor Andrew Golan of Talent Computers Systems introduces the STAB language, his company uses to write programs for the Commodore 64. Both compiled and interpreted, it offers a lot more than Basic.

## DIY Forth

Another installment of Richard Hunt's enlightening Forth series



## Adventuring into the Valley

This month our regular adventure biffin John Ransley takes an undepth look at the game that's making all the noise - Domark's 'Eureka'.

## Dallas on business

Like most people, Karl Dallas simply loathes doing his accounts. But he salvages an accounts package for his Commodore 64 might do the trick. So he's looked at programs from Gemini and Dialog to see if they will solve his (and your) problems.



## Sounding the Alarm The Sentinel alarm system reviewed

Bested from his Home Control series, Chris Darnham looks at a commercially available alarm system controlled by a Commodore 64.

## Tommy's Tips

Last but not least, Tommy faithfully answers your computing problems



## Commodore Corner

Commodore big-wigs must be glowing with pride and joy (rather like a Miss World or European Song Contest winner) because their very own pride and joy, the Commodore 64, has just been voted Home Computer of the Year for the second year running. Voted by whom, you may ask?

Judging was done by seven international computing magazines, from the UK, Germany, Italy, France, the Netherlands and the USA. None of them, by the way, were Commodore's dedicated magazines. That spurred Commodore on to make the claim that the 64 is currently the best-selling home computer in the world - a true rags to riches story?

Meanwhile, Commodore's latest machine the Plus 4, is in for some heavy promotion. Computer hardware retailers the Spectrum Group has organised a competition in conjunction with Commodore to promote what's intended to be the 64's big brother.

What do you do? Well, just pick up a letter from any Spectrum store and enter the not very original competition to place six of the Plus4's attributes in order of merit. Funny enough, its built in software (the facility most people thought Commodore was plugging) doesn't even get a mention.

The winner (and three friends) gets a seven night holiday in Florida, squeezing in Disney World and the Kennedy Space Centre. You'll also get a holiday full of money (£2,500) to spend. Yes runners up get £100 gift vouchers. Funny, nobody wins a Plus4? You'll have to hurry, though, closing date is December 31st.

## New Year's games

64 owners are in for the cream of the new games launches for Christmas and the New Year.

Gone are the days when a top game appeared on the Spectrum first and was converted to the Commodore months later.

With the latest market research from Gallup showing Commodore neck and neck with Sinclair in terms of mucleos sold, many of the software houses are launching their products simultaneously for both systems.

Commodore owners are

further privileged in that they can choose from the wealth of excellent Commodore software being imported from America by the likes of US Gold, Software, Anolisoft and Beyond.

Most exciting of the games in the US pipeline is **Conan** from Datasoft. The game is officially licensed from Lucas films and will challenge the muscle bound star of conans and films to fight his way through seven progressively difficult games screens.

Action takes place in a castle chamber where flame monsters and flying dragons must be slain by Conan with his mighty sword if he is to win immortality.

Beating Conan up to the shops will be another hero of the big screen - **Indiana Jones** - protagonist of **Raiders of the Lost Ark**, and **Indiana Jones in the Temple of Doom**.

Indy's game is not based on any one of the films in particular but features a number of swashbuckling challenges typical of the screen adventures. There is an added challenge in **Indiana Jones** as the player has to work out what the objective of the game is as there are no specific instructions.

Indiana Jones and Conan will be the first launches in a new series of imports from US Gold entitled **Famous Names**. The games will range in the normal US Gold price range - £9.95 for cassette and between £12.95 and £14.95 for disk.

Conan is not expected to be in the shops until late January. Other titles appearing on the Famous Names label will be a

More muscle for your 64

new racing car game from Gormi that US Gold are hoping will be endorsed by Nicki Lauda.

Summan Lee Majors jumps into the picture with the latest game from Elite - based on the TV show the **Fall Guy**. The player can take part in a number of dangerous stunts including train-walking and being whisked off the top of a burning skyscraper by helicopter.

Spectrum game kings Ultimate are launching their first Commodore game for Christmas with **Jet Pac** - a game that challenges you to assemble a rocket, fuel it, and blast off to another planet. Also hoping to double the revenue from their Spectrum titles with Commodore conversions are Beyond Software who will launch **Lords of Midnight** and **Desondark's Revenge** for the 64 in the New Year.

Mosaic are attacking the Christmas market with three new game book adventures. **The Saga of Erik the Viking**, **The Nomad of Time**, and **The Stainless Steel Rat** saves the World get the computer game treatment.

Still no sign of the **Great Space Race** from Legend, the long awaited sequel to **Valhalla**. This one could still just steal the show before Christmas although it will be hard pressed by Anolisoft who are launching the entire **Electronics Arts** range at UK prices.

One thing is certain - Commodore owners with a bit of spare cash to spend on software in the New Year will have dozens of good games to choose from.

## SHORTS

**Freddie and Alice on tape:** Good news if you've always envied fortunate disk drive owners with their tuneful copies of Audioactive's Fantastic Freddie. The antics of the greedy telephone engineer are now available on tape, complete with Novaloud, for £3.95. The same goes for Alice in Videoland which has a total of 90K machine code. Apparently, parts of the program have to be loaded whilst the game is in progress. Thanks to Novaloud, that's now a feasible proposition on cassette, according to Audioactive.

## SHORTS

**Blunder in Reverse:** Vic Virtual enthusiasts will have spotted our blunder in the November issue: we gave the assembly code but not the Basic loader for the Reverse routine. Here it is:

```
10 FOR T=682 TO 716
20 READ A
30 POKE T, A
40 NEXT
50 DATA 165, 0, 123, 0, 169, 36,
123, 1, 166, 0, 177, 0, 73, 128,
145, 0, 230
60 DATA 6, 206, 246, 230, 1,
165, 1, 201, 32, 206, 238, 96
```

## SHORTS

**Doublethink:** faced with the problem of dealers who are no longer falling over themselves to stock Vic games, Anurog has compromised by producing duo tapes which play on one side for the 64 and on the other for the Vic (with 16K expansion). That may save shelf space for dealers, but what do you do if one side won't load? Eight titles are available in the £3.95 range there's **Tom Thumb**, **Las Vegas**, **Mmpades** and **3-D Time Trek**. For £1.95 you'll get **Bongo**, **Flight Path 731**, **King and Skramble** - at least you'll have more people to swap games with.

## SHORTS

**SID blunder:** we missed out a couple of program lines in last month's article on the SID chip. The lines will let you generate 'white-noise'.

```
10 SID = $4272: FOR L = SID
TO SID + 54: POKE L, 0:
NEXT: POKE SID + 54, 15:
POKE SID + 12, 240
20 POKE SID + 11, 129: FOR F
= 0 TO 269: POKE SID + 8,
F: FOR T = 0 TO 10: NEXT:
NEXT: POKE SID + 11, 128
```

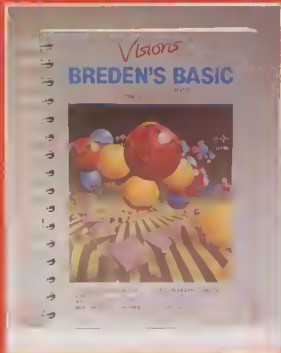




NEW FROM

Visions

# BREDEN'S BASIC



The **ESSENTIAL EXTENDED BASIC** for the Commodore 64 incorporating **HIGH RESOLUTION COLOUR GRAPHICS, STRUCTURED PROGRAMMING TECHNIQUES, MULTI-COLOUR GRAPHICS, USER DEFINED CHARACTER GRAPHICS, MUSIC and SOUND SYNTHESIS and TOOLKIT FACILITIES** plus many other useful features.

**BREDEN'S BASIC** has more commands and routines for the programmer to use than any other **EXTENDED BASIC** currently available. It also includes the **SOUND and GRAPHIC chips** to their fullest extent should you wish to write **MACHINE CODE**.

**BREDEN'S BASIC** is from **VISIONS** and as with all their products we've created a well written and **USER FRIENDLY PROGRAM** with it is the **MOST COMPREHENSIVE BASIC** yet available for the Commodore 64. Using **BREDEN'S BASIC** can only enhance the Commodore 64's versatility and its programmer's ability.

**BREDEN'S BASIC** comes with both disk and tape, offering the user the facility to upgrade at such time as he acquires a disk drive. **REMARK: IN LESS THAN 8K BREDEN'S BASIC** all we plenty of room for program development with a **HIGHLY COMPREHENSIVE and EASY TO USE MANUAL** with a set of **NELPFUL HINTS** in the appendices. The **USER REGISTRATION DOCUMENT** enables us to update your software **As And** when **Visions** brings out new releases. **BREDEN'S BASIC** the **GREAT VALUE FOR MONEY (\$9.95)**. A **HIGHER DEGREE OF VERSATILITY** and **TREMENDOUS USER FRIENDLINESS**.

All in the **GREAT EASY TO USE PACKAGE**.



Available from leading  
stockists including  
Boots and W H Smiths  
or direct from address below. C&M

C&M LTD  
c/o THE STRAND HOUSE  
61-63 THE STRAND, SPENTFORD  
MID. 14 TWENTY 6 940 001

AT LAST MICROMEGA KINGS OF  
SPECTRUM GAMES BRING THEIR  
QUALITY TO THE COMMODORE 64.

**MICROMEGA**

Available through  
good computer  
stores everywhere

**£8.95**



Free the golden city  
from the clutches of  
the wicked Almer!  
Battle his guardian  
devils, force entry  
to the palace  
reveal the magic  
and finally do battle  
with the genie  
himself! A unique  
pure arcade  
challenge for the  
CBM64 owners.

# ANKH Competition

This is a graphic adventure from Beyond which doesn't use text but invites you to manoeuvre through a series of challenges.

As you progress, you will collect along the way; tools which may help you out in awkward situations; and clues which will determine your next course of action.

It's a build up as you battle through each problem, firing at keypads to open doors, dodging fire from cannons, and learning to manipulate the word of Ankh. We have 26 copies of the solution to the first correct solutions to the Ankh puzzle set out below.



Work your way into a Mindprobe which can fire in four directions; pick objects up and put them down.

In the bizarre world of Ankh, sliding doors are activated by keypads which work when they are lit on. Shange cannons divert fire in different directions; controls move the ghostly Shadow probes around duplicating your Mindprobe's activities.

There is much more to the bewildering puzzles found in the 56 rooms of Ankh but here we have based a competition on just the elements mentioned above.

We have laid out a room consisting of several corridors with the way out being shown by the red door. The objective is to escape through the corridor beyond the red door but first you must open it - and the red keypad is not the most obvious choice.

Each keypad corresponds to the doors of the same color. So the yellow keypad will operate any yellow door on the layout, each time it is fired at.

The doors slide back in the direction of the arrow and may block another passage by doing so.

The blue shadow probe can move and fire just as your own can but it must be

stopped before it can fire. It moves at a third of the pace of your Mindprobe.

The controls for operating it are shown in red and will explode when they are fired upon, so they can be used once each.

Control 1 Moves the shadow probe to the right.

Control 2 Stops the shadow probe.

Control 3 Makes a fire downwards.

Remember each can only be used once.

For the purposes of this game, the only things you can pick up are the blue cannons.

These divert your fire in the direction they are facing. So if you fire at the right facing cannon - from which ever direction - it will divert the bullet to the right.

You may only pick up and hold one item at a time by simply moving it and it doesn't hamper movement. But the probe cannot go through impossible gaps and only fires in straight lines. To enter fire in the coupon below. It can be done easily in under 20 stages. Use phrases like "Fire at A, Explode D" Pick up G Put down G at "X" on layout" (place an "X" on the layout).

We will be able to see from your order whether you have mastered the solution or not.

- A Keypad to operate orange doors
- B Keypad to operate yellow doors
- C Keypad to operate red door
- D Control to move shadow probe right (once only)
- E Control to halt shadow probe (once only)
- F Control to fire from bottom of shadow probe (once only)
- G Downwards firing cannon
- H Right firing cannon
- I Upwards firing cannon
- J Left firing cannon
- K Shadow probe
- Mindprobe

## ORDER OF MOVES

Move 1	
Move 2	
Move 3	
Move 4	
Move 5	
Move 6	
Move 7	
Move 8	
Move 9	
Move 10	
Move 11	
Move 12	
Move 13	
Move 14	
Move 15	
Move 16	
Move 17	
Move 18	
Move 19	
Move 20	

Remember to keep a close check on the doors and where they are.

The first 26 correct entries will win a copy of Ankh.

The competition is not open to employees of EMAP Business and Computer Publications. Entries should reach this office by no later than 20th January 1985. The editor's decision is final and no correspondence will be entered into.

NAME

ADDRESS

SEND ENTRIES TO: ANKH COMPETITION, COMMODORE USER, 30-32 FARRINGTON LANE, LONDON EC1R 3AU

# QUALITY CONTROL FROM CREATIVE SPARKS ON C64

**For those  
who demand  
excellence**



**WING**  
The most highly anticipated game of the year is here! Wing is a fast-paced, action-packed game that will test your reflexes and your ability to stay on your feet. It's a game that's as exciting as it is challenging. And it's a game that's perfect for the C64.

**WING**  
The most highly anticipated game of the year is here! Wing is a fast-paced, action-packed game that will test your reflexes and your ability to stay on your feet. It's a game that's as exciting as it is challenging. And it's a game that's perfect for the C64.

**BIRD MOTHER**  
This is a truly unique game that will test your reflexes and your ability to stay on your feet. It's a game that's as exciting as it is challenging. And it's a game that's perfect for the C64.

**WING**  
The most highly anticipated game of the year is here! Wing is a fast-paced, action-packed game that will test your reflexes and your ability to stay on your feet. It's a game that's as exciting as it is challenging. And it's a game that's perfect for the C64.



Available from All good computer software stockists

Send me (tick as required)

- ☐ **JAVA JIM** TNC163 (C64) £7.95  
☐ **COUNTDOWN TO MELTDOWN** TNC273 (C64) £7.95  
☐ **BIRD MOTHER** TNC263 (C64) £7.95  
☐ **WING COMMANDER** TNC203 (C64) £7.95  
☐ My local stockist's address  
☐ Your full list of games

Game/s at £7.95 each

+ single P&P sum

Total to send

£ \_\_\_\_\_ p

30p

£ \_\_\_\_\_ p

## Method of payment

By cheque or PO (no cash) made payable to **TECS**

or

Enter card no.

☐ By Access

☐ Barclaycard

\_\_\_\_\_

Sign below.

\_\_\_\_\_

Credit card sales: UK buyers only

Response within 21 days.

Creative Sparks,  
Department M0,  
296 Farnborough Road,  
Farnborough, Hampshire, GU14 7NF  
Telephone: (0252) 518364

Name \_\_\_\_\_

Address \_\_\_\_\_

## Jansen interface

There's now a supermarket trolleyful of printer interfaces available for the Commodore 64 ranging from cheap offerings that need RAM-based software to drive them and offer few facilities, to the expensive 'unlabeled' interfaces which do almost everything but boil a kettle. The new Print-64 device from German-based Jansen Elektronik, costs £83 and falls into the latter category.

It's a Commodore interface that connects to the 64's serial port. No extra software is needed as the device has its own processor, 8K of RAM acting as a buffer and an EPROM chip. It's especially adapted to drive a 9 by 9 dot matrix printer like the Epson or Star machines, so you could achieve print speeds up to 180 characters per second.

As expected, the device will print the complete Commodore

character set both normal and inverted. Hi-res screen dumps can also be taken in four sizes. Those can be normal or inverted. Pictures you've created with a 'paint' package can be dumped to the printer, too, though obviously not in colour. The device compensates for that by selecting a different shade of grey for each of the screen colours.

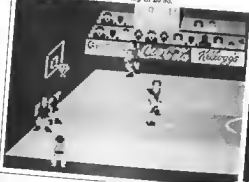
But to do that, you'll need to use special commands on the floppy disk supplied (a cassette version should soon be available). That disk also contains a tutorial, complemented by a list of secondary addresses on the device's outer casing. The device is available now on mail-order direct from Jansen Elektronik, 3090 Leverkusen Str, Unter Oibach 1, Germany.



The long awaited sequel to Andy Spencer's enormously successful International Soccer cartridge is on its way. Sources inside Commodore tell us that this game is now in the final tuning stage. Its graphics are every bit as sensational as the football game's were, with cheering crowds, adverts on the stadium boardings, and authentic movement of the ball.

The Commodore Soccer game was the most successful game ever produced by Commodore themselves - most of the fun coming from third party independents.

As well as the basketball game there are also rumours of a follow up to the first soccer cartridge - International Soccer II. The basketball game is also thought to be produced on cartridge and will have a price tag of £9.95.



Do you spend many hours typing in numeric data into your Vic or Commodore 64? If you find the conventional Commodore keyboard a chore, the Commercial Products numeric keypad may be just the thing for you. It costs £29.95 and connects in parallel with the keyboard, using no extra software. It features numeric keys, a point and a Return key. More details on 0293 545751.

## Books go soft

It's not news that book publishers are foraging a trail into the bits computer software market. But most of them have, so far, produced only educational software for children. Now, Blandford publishers is producing a range of software for the Commodore 64 that complements some of its best-selling titles - of course, you get the book with the tape.

The packages, according to Blandford sales director, Chris Lloyd, are designed for people who require "a more serious application relating to his or her leisure and domestic activities, the tape enables you to make better use of the book." So what's Blandford offering?

First there's the rock musician Dave Stewart's *Introducing the Dots* book, which teaches you how to read, write and arrange music. That process is now complemented by the accompanying tape. Then there's *Plan and Design Your Garden*, for which the program allows you some on-screen planning.

The Prediction Birthday File package contains the Prediction

Book of Astrology and a tape that lets you keep tabs on birthdays and astrological profiles.

If your stars are more romantically inclined, there's *The Love Oracle* package which contains Guy Dumas Knight's book *The I Ching* in Love. Apparently, this has something to do with predicting questions of love, relationships and marriage. Each book and-tape package costs £14.95. More details on 0209 871171.

## SHORTS

**Hold the front page:** committed users of Wordcraft, whether it's the standard Pet version or the newest Wordcraft 64, now have their own Wordcraft-dedicated newspaper, published by Dataview Wordcraft. Called *Wordcraft Express*, it's designed to provide users 'with a forum through which they can express views and opinions.' More than that, the first issue contains a feature on an academic who's used Wordcraft to write a book in Old Icelandic. Whatever next? Copies can be obtained by writing to Amur Roy, Wordcraft Express, Radux House East Street, Colchester CO1 2EX.

# the six-four supplies co

p.o. box 19, whitstable, kent ct5 1tj

Access/Visa Orders: 0227 266289, 0227 462600

...Number One For Choice...

**The Six-Four Supplies Company** is the premier independent multi-order supplier of products for the Commodore 64. Shop by mail order in comfort and convenience in the kind of service enjoyed by thousands of regular customers in the UK. Europe and as far afield as Fiji. We can provide anything from our catalogue of over 7000 items of recreational, educational and business software. (Catalogue 50p and large SAE but free to customers)

**AMERICAN IMPORTS - PRICES PLEDGE** We are prepared to offer the lowest prices on all imported software. Please for a quote if you are in any doubt!

Please add 50p P&P for orders under £10 (Europe £1 each dem. Abroad also where at cost). Make cheques POs payable to **THE SIX FOUR SUPPLIES COMPANY**

## OISCO

£9.95

(Softouch) - cassette

This is the most powerful tape to disk transfer utility you can buy. No program rewriting necessary. Menu driven.

## TAPER

£9.95

(Softouch) - cassette

Basic security backup of your own BASIC/monitor code programs. very very powerful!

## FASTBACK

£9.95

(Softouch) - cassette

Can make backups with a difference - they will load up to seven times faster than the original! Impressive!

**SPECIAL OFFER!** All three - Taper, Oisico, Fastback - for £25.75

Dealer enquiries welcome

## DISKEY

£36

(Adventure Inc) - disk

Diskey gives your Commodore 64 the file handling and disk editing capabilities a serious user needs. Copy, SED, PFG or VSR with menus. Allows you to examine, copy or modify any disk. Rescues disks from a crashed disk, or simply recover scratched files. For one or two disk units. Also available, for single disk units is the slightly less versatile but no less powerful SUPER-DISK UTILITY (£31.50)

## PAPERCLIP

£75

(Batteries Inc) - disk

**LOOK AT OUR LOW LOW PRICE!** If you've been saving up for a wordprocessing program then this is the one to get. For those that so lazily do know, this is also the best in a very long time! With 80-column display mode. Can be used with 80 column board (£90). Full selection of other WP programs available.

## MULTIPLAN

£95

(Microsoft/Heasman) - disk

Easy to use but very powerful spreadsheet. Option to print cells by word tables. Text columns/rows numerically. Alternatively Output to Commodore 64 printers only. Very highly recommended. (Compendio books on its use available)

## CALCRESULT

£95

(Pentek) - cartridge + disk

Has true 3D (multipaging) facility and histogram features. Versatile for Commodore and Epson printers. This is a very powerful and much respected spreadsheet. Single page version £67.50 (cartridge)

## MIKRO

ASSEMBLER

£55

(Supersoft) - cartridges

Features three pass assembler with mixed labels, source files can be loaded, monitor, screen editor, disk or tape operation. Plus AUTO, DELTA, FORMAT, FIND NUMBER, DISASSEMBLE OUT and TABLE. Monitor has standard TIM commands plus hunt, transfer and disassemble.

## HS-64 ASSEMBLER OVERFLOW SYSTEM

£55

(JCL Software) - cartridge + disk

Over-packed with all the features you need to write machine code. BASIC and hybrid programs. Cartridge and disk with assembler, editor. DOS supports a sophisticated monitor. Disk includes assembler and worked examples which you may be able to look to your own programs. Features in code: AUTO, FIND CHANGE, DE, LITE TYPE, GET PUT, DO, LIST, RUN, JOIN, SCROLL, COM, SIZE, REAS, SIZE, RETURN, CURSOR, BOM and number keys. Item convenience. And there's a lot more! - including a true overflow feature! This is the most versatile assembler toolkit available for the 64 - the one that's cheap at 55p! Use a special discount version with the assembler also on ROM is available (£67.50)

## KOALAPAD

£80

(Hale Tech Corp) - cart or disk

This is really a great device for gaming with the youngest of kids to teens to the computer - but capable of much more and fun for the whole family! Comes complete with KoalaPad which is fantastic for graphics. Facilities include zoom, color, crop, draw lines, rays. Pictures can be saved to disk, incorporated within your own programs. (Programmer's Guide £14) - outlines ways in which the pad may be used and explains programming needed. Support programs include LDDO Design Master (£25), Spelling (£23), Colouring (£25). Other specs are available.

## MICRO-SIMPLEX

£173

(Micro Simplex) - disk

If you're a cash business and need to maintain an accurate audit trail and VAT record, this is the program for you! Will save hours of paperwork. Fully recognized by the authorities - it's based on the Simplex book keeping system. Suitable for schemes A to F. Demo available.

## THE LAST ONE

£57.50

(D'A'AT Systems) - disk

**SPECIAL OFFER PRICE!** Program generator that frees you from the tedium of writing tailor-made disk management programs. Gratefully available database programs with ease. TLO creates stand-alone error-free coding in standard BASIC which can then be compiled or recompiled. (PETSPEED £50) Input is in the form of one-line descriptions defining a plain English, the user's requirements. Programs you create can be for any application and as simple or as sophisticated as you like. Very very highly recommended - BUT HURRY!

## S.A.M.

£48

(Trentex) - disk

This is SOFTWARE AUTOMATIC MUDITH, a quite outstanding piece of software which gives you 64 address speech synthesis capability. Offers English text-to-speech or phonetic input in direct or program modes. Full control over pitch, speed, inflection. Expense maybe, but there's nothing like it even on hardware!

## SUPERBASE

£48

(Prestelink) - disk

Really excellent database management program, and at our special price. This one is the best of its type and a must for all serious 64 users and a must for anything from mailing lists to stock control and inventory. Lets you tailor a database, its prompts and displays to your exact requirements. Although the core program always remains the same. Has database features that are easy to use yet powerful beyond the needs of many mobile BEEPING STONE and HOMEBASE application modules - for use with Superbase - also now available. Details on request.

## FLIGHT SIMULATOR II

£40/£33

(Softlight) - disk or tape

This is so good the experts think you can learn this from as far as instrument control and flying are concerned! Whatever, this simulation is truly excellent. Expensive but it is the best on the 64 by far - and a MUST for the collector!

## SPECIAL OFFERS

PILOT

(d) £40

## ASSEMBLER 64

(d) £45

## LOGO

(d) £57

## EASY CALC 64

(r) £40

## MAGIC DESK

(r) £40

## SIMONS BASIC

(r) £45

## EASY SPELL (US)

(d) £20

## EASY MAIL

(d) £20

## Superbase and Paperclip

bought together:

£156!

Amongst the more obscure items we can supply are XL50 eighty-column cartridge for professional wordprocessing. Has own text editor and spread sheet. Excellent value at £95. A parallel bus interface for the 1541 floppy drive! This speeds up data transfer by over five times! Includes cable, interface and relocatable software - price is £75. ■ REE interfaces - JCL 2048 or DAMS £52 - has connected your 64 to IBM pent and drives. Penny a megabyte or two of disk storage - that's how we use some of our 64s! ■ Printer interfaces which range from user port parallel cables (£25 including software) to a cartridge port conversion interface the very sophisticated Grapser C0100 or Data 224 at £35, which enables most dot matrix printers to print the special Commodore ROM graphics symbols for program lists or graphics outputs. (all we help you choose properly)

## BOOKS

There are some 64 books specifically about the 64! We have a full list (50p) with a description of each plus details of many other books of interest. We can supply ANY book at cover price plus 75p each towards P&P.

## ATMATH OF THE 1541

£10.95

Really essential book for those keen to get to grips with 1541 use. Absolutely everything you need to know - includes ROM listings, use of programs such as COPYALL on the 1541/disk disk.

## COMMODORE

64

## HOME COMPANION

£10.95

If you want more details and explanations on the use of some of the better quality 'serious' USA software for the 64, this book is an indispensable reference.

PRICES CORRECT AT TIME OF GOING TO PRESS. Let us quote you if you manage to find lower!

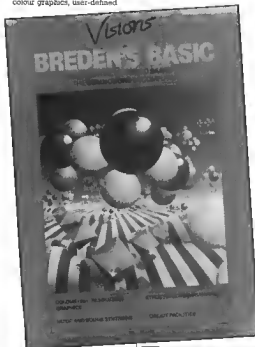
## Pretty Basic stuff

Following in the wake of Simon, BC and David comes Bredén's Basic from Visions Software Factory. Described by its progenitors as "the most comprehensive Basic available yet for the Commodore 64", here's a quick roundup of facilities offered.

The program has 135 commands running in 8K of RAM incorporating hi-res colour graphics, structured programming techniques, multi-colour graphics, user-defined

characters, music, sound synthesis and toolkit facilities.

The program comes in a library case and is well documented with a large and well-designed manual. Still, at just over £24, it doesn't come cheap. Sensibly Visions has packaged up both a tape and a disk so you can upgrade to a disk drive without having to throw the whole lot away. We're putting it on our future review list.

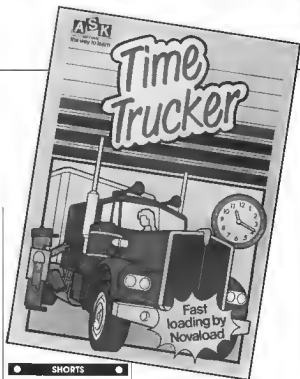


### SHORTS

**Grid card:** Phoenix Publishing has produced what it calls a "Grid Card" for the Commodore 64. The card folds up rather like a map and contains a wealth of reference information that should save you ploughing through the Programmer's Reference Guide. There's a section on Basic which includes syntax conventions, functions, commands and examples of how to structure Basic statements. Then there's the 64's character set, a default memory map, colour and control codes, SID and VIC chip registers, error messages – and a whole lot more. All that for £1.99.

### SHORTS

**New man at Commodore:** Commodore has appointed a certain David Gerard as its new UK Marketing Manager, the aforementioned having marketed telephones and calculators before joining the great Commodore empire. "1985 will be marked as the year that Commodore broadened its horizons", opines Gerard. What horizons would they be? Well, to regain Commodore's "historic dominance" in the business market. Wish will no doubt appearance of the much publicised Commodore PC and 28600 machines, Gerard will have his work cut out.



### SHORTS

**End of the Masquerade:** Harefoot has now released the second and final part of its Harefoot series. Called Harefoot-Finale, it will also help you solve the first puzzle, putting you well on the road to winning the Golden Jewelled Hare, or £30,000. Harefoot reckons the winner will face a difficult decision whether to go for the money or the Golden Hare – we wait with bated breath.

### SHORTS

**Turbo on disk:** Supersoft has developed a turbo loading utility which claims to speed up loading times from a 1541 disk drive by around three times. It's been incorporated into Supersoft's new Buscalt-3 spreadsheet. Don't worry if you've bought the sluggish version, the company is offering a free upgrade. More details on: 01-861 1166.

### SHORTS

**First see books:** book lovers will remember that we reviewed two rather good books for the Commodore 64 from US publisher Abacus in the October issue. The range of four titles is now available from First Publishing in this country at a cheaper price. There's Anatomy of the 64 (£10.95), Anatomy of the 1541 Disk Drive (£10.95), Tracks and Tips for the 64 (£10.95) and The Commodore 64 Machine Language Book (£8.95).

## Learning to truck

Applied Systems Knowledge (ASK) the accomplished education software house which wrote Face Maker (amongst others) for Commodore and has written a large stack of educational programs for the BBC and Electron machines, has now released a game under its own name for the Commodore 64.

Called Time Trucker, it aims to help 8-14 year old children understand the relationship between the twelve-hour analogue clock (the one with the hands) and the 24-hour digital types.

It also explores the relationship between distance and time by getting you to drive a delivery truck, keeping to your time schedule and working out the best route – oh, and there's the inevitable road repairs to watch out for. With a little skill, you might become the Super Trucker.

The game comes on cassette, costs £7.95 and includes what looks like a useful twelve-page pamphlet. Unlike most educational games on tape, this one features Novaload so you're up and trucking in just over two minutes.

# Letter from America

## The soft side of the States

Dan Gutman reports

**Last month, Dan Gutman made us all drool by telling us about the new American Commodore-orientated hardware we can't buy across our end of the Atlantic. This month, he's rounded up some unusual US software. Do you like playing with frogs?**

I had the chance to meet your own Douglas Adams the other day. He was in New York for the introduction of *The Hitchhiker's Guide To The Galaxy*—the interactive novel. Infocom is distributing it in computer stores and publishing heavyweight Simon & Schuster is shipping it into book stores. It's very exciting. This is the first time a "name" author has written an interactive book. I think it ushers in a new age of literature, the same way *The Jazz Singer* revolutionized the movies.

Adams isn't the only author who has gone interactive. Trilium Software (which is really Spinalizer Software) has signed big name writers Ray Bradbury (*The Martian Chronicles*), Arthur C Clarke (2001: A Space Odyssey), Robert Heinlein (*Stranger in a Strange Land*), and Michael Crichton (*The Andromeda Strain*) to turn some of their books into graphic adventure games.

Bradbury's *Fahrenheit 451* is already out for the Commodore, and I like it a lot. The game starts with you waking up near a pond in Central Park and that's just a few blocks from where I live. None of the Trilium games have the depth of Infocom's all-text adventures, but they do have pictures, and that's important for some people. You can bet that other big name authors will be going interactive too.

I'm pretty dead. I asked Douglas Adams that question and he replied, "Absolutely not. When radio came out, everybody said books will disappear. When television came out, everyone said radio will disappear. People find new ways of enjoying themselves. But there's something about the experience of reading a book which nothing else will

replace. You can't take a computer game on the train."

### Frogger fails apart

Probably the most outrageous piece of software ever has just come out for the Commodore Operation Frog, by Scholastic. It lets you do a simulated frog dissection! Those days of hacking up live frogs in biology class may be over now that we can do it on-screen. No blood, no mess.

You use the joystick or keyboard to remove 23 internal organs (including everybody's favorite, the gall bladder) and the computer tells you about each one. It's fun, educational, and there's something definitely warped about it.

The best part is that you can do something no creature has ever done—put the frog back together. If you put all the organs back where they belong (and this is the best part), the frog jumps off the operating table and does a silly dance with a top hat and cane! This one is strictly for the younger set, but it's cool. For more information, write to Scholastic, 750 Broadway, New York, NY 10003.

### On the road

One of the big debates in the US is, "What can you do with a home computer?" A lot of folks think computers are only good for thinking games and word processing. But there's a new program out that has a real practical twist—Roadsearch Plus. This is a computerized road atlas of the United States. All you've got to do is type in the city where you live and the city you want to go to, and the computer

will calculate the shortest possible route.

Roadsearch Plus will also give you a printout of the detailed driving instructions, how long the trip should take, and how much fuel you will use. The program contains 406 cities and 70,000 road miles. (Write to Columbia Software, Box 2235W, Columbia MD 21045).

That may not be useful to you guys, but here's an idea—why don't one of you hot-shot programmers do the same thing with the map of England? You guys like to go on trips as much as we do. I'll tell you what, when you finish the program and you sell a million of them, just send me 10% of the profits. Do we have a deal?

Another new program you might be interested in is *Fast Load Cartridge* from Epyx. It does what it says—it will load and power up disks five times faster than the Commodore disk drive, and copy disks ten times faster. You don't have to type any extra instructions into the keyboard. Just plug FLC into the Commodore cartridge port and it works automatically, even with the copy-protected disks. It's about the same price as a computer game (Epyx, 1043 Kuel Ct, Sunnyvale, CA 94088).

A bunch of hot new games just hit the stores over here: *Championship Lode Runner* (sequel to Broderbund's *Lode Runner*), *Obabusters* (Activision, based on the movie), *Dragon's Lair* (the home version of the first laser arcade game).

### Gossip corner

We're all sit around and wait for the Commodore to officially introduce their new "Auge

Lorraine" computer, rumours are flying over what final form it will take. One programmer who I trust like my brother claims the machine will sell for just \$695 including a disk drive, and that Commodore is working around the clock to write software for it. Another equally trustworthy magazine editor insists the disk drive will be 3.5 inches (like Macintosh), but the computer will sell for \$1000.

Yet another "industry insider" claims the computer is powered by three new microprocessor chips, code named "Agnes", "Daphne" and "Portia". I also hear there is a successor to the C-64 in the works—the C-128. How do you know who to believe?

The Plus 4 is out, as you know, and a disk drive for it is coming in January. Unfortunately, neither is compatible with the Commodore 64. It's too early to tell how the Plus 4 is doing in the US, but some people are saying that several "key employees" at Commodore don't like it. They say it's not any improvement over the C-64.

A lot of these questions will be answered at the Consumer Electronics Show, which is taking place in January at Las Vegas. I understand the Commodore booth will be right next to the Atari one, and you know who owns Atari now—Jack "Business Is War" Tramiel! Jack started Commodore as a typewriter repair shop twenty-five years ago. He just started another price war, dropping the Atari 500XL to \$120. Rumor has it, Jack's about to shock the world with a new machine at the show. I'll be there, and I'll let you know what happens. Isn't this exciting?



# Interview

## Opportunity Knocks.

There's a great big business out there for you... if you can find it. The right place to start is at the right time.

With the right information, you can find the right place to start.

FRONT RUNNER is a multi-media, online service, designed to help you find the right place to start.

FRONT RUNNER is a multi-media, online service, designed to help you find the right place to start.

FRONT RUNNER is a multi-media, online service, designed to help you find the right place to start.

To: Front Runner, K-soft distribution,  
620 Western Avenue, London W3 0TU

Rush me \_\_\_\_\_ Tapes \_\_\_\_\_ Disks of Interview \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Post code \_\_\_\_\_

Telephone \_\_\_\_\_

I enclose a cheque/PO made payable to K-soft distribution for £ \_\_\_\_\_ (post free)

or debit my Access/Visa\*

Details as applicable

I would like to hear news of more Front Runner

releases ☐ Yes

Please allow 21 days for delivery

040000

**FRONT**  
*Runner*  
Meet the Challenge

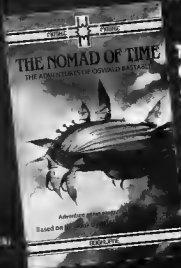
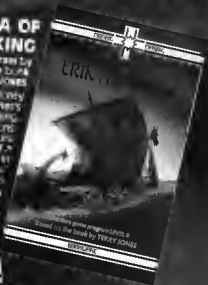
# GO NORSE, SOUTH, EAST OR CENTURIES...



## THE STAINLESS STEEL RAT SAVES THE WORLD

Adventure game program by  
HARRISON, based on the book  
by HARRY HARRISON.  
You are Silvery Rat #102,  
the Stainless Steel Rat.  
Your mission is to travel  
through time to save the world  
— Challenging, humorous,  
fast adventure.  
Comes on 24 master diskettes.  
2200 Lines.  
Available everywhere books are sold (over 100).

**THE SAGA OF  
ERIK THE VIKING**  
Adventure game program by  
LEVEL 9, based on the book  
by TERRY JONES.  
Enter the world of Minot  
with the Viking  
Erik the Viking.  
Over 200 locations,  
a reference manual,  
a map, with graphics. The  
story of Erik the Viking is  
told in a series of  
chapters and a victory game.  
Includes 24 master disk  
and a 24-page manual.  
Available everywhere books  
are sold (over 100).



## THE NOMAD OF TIME

Adventure game program by  
BASTARD, based on the book  
by MACHA MACHUCK.  
A fast adventure with  
graphics, graphics, by Bastard  
with Machuck, the  
Nomad of Time.  
Adventure, you travel  
through time to change the course  
of history in a series of  
time streams.  
Comes on 24 master diskettes.  
2200 Lines.  
Available everywhere books  
are sold (over 100).

Published by Minicomp Publishing, Ltd.  
Minicomp, 50 John Wiley & Sons Ltd, FREEPOST,  
Raffins Lane, CHICHESTER, West Sussex PO19 1YP.  
Available from all good bookshops and computer stores, or directly by mail to the publishers.

To: Lesley Valentine, John Wiley & Sons Ltd, FREEPOST,  
Raffins Lane, CHICHESTER, West Sussex PO19 1YP

Please send me

**ERIK THE VIKING**

- ☐ 0 946855 08 0 Spectrum 48K £995  
☐ 0 946855 09 9 BBC Micro B £995  
☐ 0 946855 11 0 Commodore 64 £995

**THE STAINLESS STEEL RAT SAVES THE WORLD**

- ☐ 0 946855 16 1 Commodore 64 £995

**THE NOMAD OF TIME**

- ☐ 0 946855 18 8 Commodore 64 £995

Postage and packing free - please allow 14 days for delivery

☐ I enclose cheque/P.O. for £... payable to  
John Wiley & Sons Ltd

☐ Please debit my credit card account £...

Card No. .... Expiry date ....  
Access/American Express/Barclaycard/Visa/Diners Club/maestro  
Telephone credit card orders - ask for FREEPHONE 5477

NAME/ADDRESS .....

.....

SIGNATURE .....

.....

.....

# Hago®

## Personal Computer Workstation.

At last you can get it all together.

Whether you're operating from home, school or office, the Hago PCW (Ref B16) adds the professional touch to your computer layout. Handsome, sturdy, with a place for everything, the Hago PCW is the home every personal computer deserves.

See your local  
dealer NOW!

If unavailable order  
direct from Hago.

ONLY £82.75

Shelf for disc drives, tape recorder, printer etc.

Keyboard worktop  
adjusts from  
20 3/4" to 29 1/4" high.

Sturdy steel frame  
finished in chocolate  
brown with simulated  
teak worktop.  
Mounted on castors  
for complete mobility.

Overall size  
31 1/2" d x 36 1/2" h x 22 1/2" w



The Office



The Home



The School

# Hago®

Hago Products Limited,  
Shipney Road, Bognor Regis,  
West Sussex. Tel: (0243) 863131

Please send me \_\_\_\_\_ (qty) Hago (R816) workstations at £82.75 each inc. P&P  
I enclose my cheque for £ \_\_\_\_\_

or debit my Access/Visa\* Account No

Name (Block Capitals) \_\_\_\_\_

Address \_\_\_\_\_

Signature \_\_\_\_\_

\* Please debit is applicable

# Whichnet?

getting hooked on Micronet 800 and Compunet  
by Brian Grainger and Ken McMahon

If the last megagame you bought now props up the kitchen table or you've thrown your Programmer's Reference Guide at the cat, you're probably suffering from acute computer boredom. But before you exile your Commodore 64 to the cupboard along with the skateboard and pogo sticks, there may be hope. You can now connect your computer to the outside world by subscribing to either the Compunet or Micronet 800 communications network. How do you subscribe? What equipment do you need? What's on offer? Which of the two is best for you? Brian Grainger and Ken McMahon have the answers.



Compunet and Micronet — the battle is on to get 64 owners into the modem clubs

## MICRONET AND PRESTEL

Before getting down to the nitty gritty I should perhaps introduce some of the ideas behind communication networks. We are all used to televisions, telephones and radios for feeding us audio and visual information. Some of you will also know about telex and telefax which are means of communicating the written word between business premises. In 1979 the idea of linking all three networks to enable transfer of information from a computer to a display terminal (your telly, to be less precise) via the phone network was launched to the public. The Prestel service was born.

### A little bit of history . . .

The basic idea behind Prestel is that information provided by various

sources, known not unnaturally as Information Providers (IPs), is stored on central computers. Users who wished to read the information would call up the computer using a keypad device connected to the computer via the phone line. The central, or host computer as it is called, would then transmit the information down the phone line to a receiving device, usually a converted TV. Although Prestel was aimed at the home user in an attempt to set the public to use their phones more during off-peak hours it was, because of the high cost involved, only business that used Prestel. In particular the travel industry has made use of it.

In 1982 as the home computing boom got into full swing it was realis-

ed that much of the equipment to use Prestel had already been bought by the home user. This computer had a keyboard and it had a display screen or could connect to a TV. The final link in the chain was a device to connect the computer to the phone network and allow data to be sent in both directions at the rates that Prestel would accept.

Prestel is set up to transmit information to the user at 1200 bits per second and receive information from the user at 75 bits per second. That device, called a modem (modulator demodulator) operating at 1200/75 together with software to drive it, was relatively inexpensive and they soon became available for the major computers such as the Pet,

Apple and BBC micro.

The computer owner now had the means to use Prestel. All he needed was a reason. This came in 1983 when Micronet was launched. East Midlands Allied Press (EMAP) decided to become an information provider to Prestel and its 'pages' would contain information of interest to the micro user. More details a little later, but in essence Micronet can be regarded as an all embracing computer club. Because Micronet is a Closed User Group (CUG) only Micronet members, who pay a subscription, can actually see the information on the Micronet pages and use the Micronet facilities.

Again like a club, Micronet has several subsections dealing with different popular computer makes. A recent addition is a section devoted to Commodore 64 users. Finally, because Micronet is part of Prestel, all the general information from other IPs would also be viewable by the Micronet member.

### Logging on

So let's go into a little more detail about the services available. I shall start with Prestel, of which all Micronet members are a part. The system is designed to be very simple to operate. With modem, TV and phone connected to your computer, it's simply a matter of dialling the local Prestel computer. Some modems will even save you a lot of bother by dialling the number for you provided you have previously stored it in the modem.

When the Prestel computer answers the call it will automatically send information to your micro and

Prestel host computer when it is asked for.

On successful receipt of the ID the host will then ask for a password. This is for security purposes so that you have an individual code for use

number (up to 8 digits) and in addition can hold up to 26 different screen displays called frames. You can display the 'a' frame of any Prestel page to which you may have access by keying in the page number and giv-



StarNet — brainchild of Mike Singleton, programmer of Lords of Midnight. An interactive game for 1000 simultaneous players. Has suffered from persistent bugs.

with Prestel to ensure nobody else uses your ID to run you up a hefty phone bill. Obviously the modem will not give the password automatically so you key it in from the micro's keyboard. There is a facility to change the password should you wish to improve the security still further.

Having got these preliminaries out of the way Prestel will send you an index page which, like all pages, is

ing the Prestel equivalent of the 'return' key (↵). For example '800' will display the 'a' frame of Page 800 which is the Micronet front page. To see the b, c, d, ... z frames, if they exist, you simply press 'a'.

Each page also has associated with it up to ten routes to other Prestel pages which can be displayed by pressing a single key (0, 1, 2, ... 9). These routes are set by the information Provider and are used to guide users quickly to where they want to go. For example a page of news headlines may have routes to pages which give more detailed information on a particular news item.

### Looking through the trees

This idea of an index page which routes to up to ten other pages (which may each in turn route to ten more and so on) is known as a tree structure and forms the basis of the Prestel information structure. While sometimes criticised by experts it is very easy to use for the beginner and unlike some networks I have tried will be mastered in no time at all.

### Now showing on Prestel

Now we know how to move around Prestel what information is available?

The following gives a guide:

- **News, Weather and Sport** — a number of IPs provide information on these topics
- **Travel Information** — train times and aircraft schedules. The latter much easier to understand than ABC Guides.
- **Travel Guides** — information on most towns in the UK including



MUD — the highly successful adventure game. Letters stand for Multi User Dungeons. Compulsive fun, but at £3 an hour you may end up in Mud Users Anonymous.

ask you for your individual identity number (ID). This number is only given to you when you register with Prestel. Again some modems will allow you to store this number and will automatically send it to the

displayed on your TV or a monitor screen. The particular page sent will be dependent on whether you're simply a Prestel member or whether you belong to Micronet as well.

A page on Prestel has a page

continued from page 21

suitable hotels to stay at International destinations are also featured.

- **Games** — a number of recreational pages appear on Prestel including a Dungeons and Dragons game.

- **Teleshopping** — provided you have a charge card like Access, Barclaycard etc. It is possible to order all manner of items directly from your micro. This includes computer equipment, household items and books. You can even book theatre tickets at certain theatres.

- **Public Information** — various Government bodies have pages on Prestel so that the user can get the most up to date information on services.

- **Electronic Mail** — you can send telex's within the UK Send letters through Prestel to any other Prestel user (Mailbox).

- **Interest Groups** — contact services are available for many things. Went to get in touch with model railway enthusiasts? Then put out a message on Prestel and make some new friends. Want a new girlfriend/Luvvific? Then put a message on Simpatico.

- **Discussion groups** — it is now possible to send messages which are very quickly displayed to all Prestel users who might be looking. In this way discussions can be carried out between users logged on at the same time.

## Services on Micronet

What about the extra services for Micronet members? Micronet has been very popular. It was the first IP to have a million frame accesses by users in *one month*. It is not hard to see why. It caters very well for micro users who happen to be an ever increasing proportion of the UK population. The following is a summary of what is now available

- **Latest Computer News** — updated daily, this service really provides hot information. If you are thinking of buying the latest whizzbang computer then somebody on the Micronet team will have tried it a few days from launch and bring back some reality to the claims of the advertisements. Can't get to the latest computer show? Never mind, Micronet will report it day by day.

- **Help line** — got a computer related problem? Then send it to Micronet to put up on the helpline pages. There must be somebody looking who knows the answers.

- **Teach Yourself Programming** — a course in learning Basic is on Micronet.

- **Sweep Shop** — got some equipment you no longer want? Then advertise it here.

- **Commodore 64 Microbase** — all the latest information on your favourite machine in one easily accessible area. That's the plan anyway, information is rather thin on the ground right now

- **Clubsport** — all the major user groups put information here. ICPUG has over 100 pages of information on regional groups, technical tips, news, reviews and a cumulative index to the news letter.

- **Chatline** — Micronet's very own discussion group.

- **Telesoftware** — perhaps the most important area. Micronet pages are used to store programs which can be transferred down the telephone line to your disk drive. They can then be run at your leisure. Many programs are free of charge but some organisations are selling software this way as well.

## Registering with Prestel and Micronet

If that lot has whetted your appetite to join up with Prestel or Micronet you'll want to know what to do. If you only want to join Prestel then you will need a modem, software to drive it and you will also need to register with Prestel. A number of modems are on offer from Tandata, Prism, OEL and Commodore to name but a few. Expect to pay somewhere around £100-£150 by the time you have bought the software as well. It may well be towards the high end for Pet users. For enquiring about registering with Prestel phone the operator and ask for FREEPHONE 2043.

## What you pay

If you wish to become a Micronet member then, if you are a 84 owner, all you have to do is contact Micronet. They have a suitable modem available, including software, at £123.65 including VAT. When you register with Micronet they will automatically register you with Prestel. The address for Micronet is Micronet 800, Talemap Ltd., Durrent House, 8 Herbel Hill, London EC1R 5EJ (Tel: 01-278 3143).

After the initial modem costs you pay for the services much as you pay for your phone. The Prestel service standing charge costs £5 a quarter to home users and Micronet an additional £8 a quarter. Provided you use the service during off-peak hours (18.00 - 0800 Mon-Fri, 13.00 onwards Sat, all day Sunday) Prestel do not charge for use. Certain Prestel pages will be charged for (such as commercial software) but most of the services mentioned in this article are free. Your phone costs while accessing Prestel/Micronet will be charged as normal through British Telecom.

*Micronet are particularly proud of their animated Christmas card. Traditionally strong in news Aladdin had a review of the new CD on screen just twenty minutes after its launch. The database contains technical information.*

*Micronet's Aladdin's Cave of fine software. Just three offerings in the Games section but each more in the public including useful utilities. Stems for inter planetary messages.*

*Compuet's Jungle — the most revolutionary part of the new system. This is your all — with news, reviews and software or data micro but be warned — the use of the jungle parallels Compuet's subscribers can win a micromer. Compuet's free software area is called the Software Park. Contains two free programs from personality programmer — Jeff Meier. The Notice Board another free access area of Compuet.*



The most impressive thing about Micronet 800 is the massive amount of information available; there are literally thousands of pages of it. There is no directory structure as such, instead index pages inform the user as to what is available. Each item on the index is accompanied by a two digit number which when keyed in takes you, occasionally via a sub index, to the relevant page. There is also a facility to GOTO a page number directly.

This system of information retrieval is not quite as simple as Compuet's. For a start you have to use two hands which, unless you can write with s



## COMPARING MICRONET



command whereas Micronet seems to respond instantly. This may seem unimportant but it can save you a lot of telephone time and when you're staring at the screen waiting for something to happen five seconds can seem like an eternity.

As far as software is concerned the major difference seems to be one of approach. Whereas both systems hold some of the titles produced by the big software houses, Compuet have a much more open attitude in that literally anyone can sell anything. So, if you like the look of it, you can buy the latest megagame on offer



## COMPUNET

Compunet is not nearly as old as Miconet 800. It was officially launched last September as an independent company, although it had originally been set up as a joint venture between Commodore UK and London-based ADP Network Services. Unlike Miconet, Compunet caters exclusively for the Commodore 64. Plans to extend it to other Commodore machines are still very vague.

### Hooking into Compunet

As with Miconet, you'll need a modem to connect your computer to the telephone system. The most obvious choice is Commodore's own Communications Modem, for two reasons. For the price of £99.99, you get a free one-year subscription to Compunet, which can be renewed at an annual cost of £30. Secondly, only the Commodore modem (at present) will let you download software from the system — but more about that later.

The modem itself is a neat black box which plugs into the 64's cartridge port — you need no extra software or peripherals. The lead is about three metres long and plugs into a standard British Telecom jack socket. If you've got the old type fitting, a socket conversion will cost you around £15.

Where can you get the modem? Probably the best option at the moment is by mail order from Vicoft. This means you will have to wait up to 28 days for delivery. If you are in a hurry you might try your local Commodore dealer. Commodore is now selling modems through dealers but it may take some time for stocks to filter through. I am reliably informed that Vicoft have sold over a thousand modems yet there are only three to four hundred subscribers to Compunet so someone, somewhere must be holding on to a few hundred.

Once you've acquired your Commodore modem there is one more thing you must do before you can explore the hidden delights of Compunet and that is register with Compunet itself. There are two reasons why this is necessary. The first is so that they know where to send the bills — more about charges later. Secondly, you will need a user identity and password, these for reasons of confidentiality and your own protection.

Armed with modem, ID, password, and of course your Commodore 64 you are now ready to get to grips with Compunet. This is comparatively simple as it is handled by software in

the modem. After typing CONNECT the computer will prompt you with a request for a number. You have the choice of twelve telephone numbers in various parts of the country, this being the case you shouldn't have any trouble finding a reasonably local one. There's even one in Luton.

As you type the number it appears on the screen so that you can check it, hit the Return key and the modem dials it for you. Magic! Once connected you will be required to enter your user identity and password, on entering this the main directory is displayed.

### Getting around in Compunet

Information on Compunet is stored and displayed in the form of a directory system. Finding your way around is relatively simple once you know how. But to get started you need to know two things: how information is displayed on a directory, and how to give commands to the Compunet computer using the 'ducksfoot'.

If you refer to the photograph of the Compunet directory you can see that the title of the directory page — Welcome — is displayed at the top with the page number (1) to the left. Below this is a list of all the items in that directory, up to a maximum of ten. Each directory consists of a page number, a title, and a code identifying the type of entry.

T indicates that a frame of text is present. This may be accompanied by a number: for example T3 means there are three frames of text. P indicates a program (PP=means Protected Program). D indicates a directory entry without accompanying text. Occasionally T or D may be accompanied by a '+' which means there is a further sub-directory under this heading.

Great! I hear you say. But now I know what's there how do I get to see it? This brings us to the ducksfoot. Not, as you would expect, a method of mass extermination for mallards, but simply an idiot proof way of telling Compunet what you want to do. The commands are as follows.

- |              |   |
|--------------|---|
| <b>DIR</b>   | : Reveals another directory.                    |
| <b>SHOW</b>  | : Reveals a text frame.                         |
| <b>BUY</b>   | : Downloads a program.                          |
| <b>SAVE</b>  | : Saves a downloaded program.                   |
| <b>EDITR</b> | : Accesses the editor.                          |
| <b>HELP</b>  | : For when you get stuck.                       |
| <b>LEAVE</b> | : Disconnects you.                              |
| <b>UCAT</b>  | : Displays a catalogue of your uploaded frames. |

pen in your mouth, makes life a little difficult. Also there are a number of commands to remember although there are usually plenty of prompts to help you out in this respect. Finally it should be pointed out that, for the moment at least, Miconet is much larger than Compunet. It should not surprise you if it's a little more difficult to find your way around.

But anything Miconet lacks in this respect it more than makes up for by the speed of its response time. Despite the fact that both systems operate at a 1200/75 baud rate, Compunet can take anything up to five seconds to respond to a

## MICONET AND COMPUNET

from Fred Smith in Barnsley. The drawback of course is that Fred's brainchild might not be the masterpiece of software engineering you expected. That's why Miconet don't do it.

That isn't to say that you can't sell software on the Miconet 800, just that it has to be very good. It's really much the same as selling it to any good software house. Miconet carry extensive reviews of much of their software as Compunet have now started to do. Compunet also have a facility for users to vote on software they have bought.

- ACCNT** : Shows you your bill (best avoided!).
- UPLD** : Uploads a text frame or program.
- LIFE** : Used to extend life of entries.
- PRINT** : Prints current frame
- BACK** : Returns to previous directory.
- GOTO** : Goes directly to a numbered frame
- MAIL** : Accesses your electronic mailbox.
- VOTE** : The Compunet claspometer — allows you to vote on software

These commands are displayed on a continuous line at the bottom of the screen and can be scrolled past a window by using the cursor keys. When the command you require appears in the window you simply press Return and it is executed.

For example, say you want to see the text frame associated with the directory entry 'new dimensions' at page 1000. Using the cursor keys you move the red bar down the screen until it highlights that particular entry. Again with the cursor keys, you scroll the duckshot until the command SHOW appears in the window. Pressing Return reveals that frame of text. Once you've read it, pressing any key will return you to the directory. This particular entry is suffixed by a '+' which means there is a sub-directory with that heading. To see this directory you would use the duckshot in the same manner, this time selecting DIR.

This method has the advantage that you only need to use one hand for cursor key operation leaving the other free for making notes of page numbers and other information. All Compunet's facilities are accessed in this way, from simply exploring the database to uploading your own textframes and programs for others to see and use. You can even charge for them.

## Now showing on Compunet

Now you know how to find your way around Compunet you'll immediately want to know what's on offer. The introductory pages consist of an explanation of how the system works, what's available, and how to find it. This is generally a good place to start.

• **Latest computer news** — you can obtain the latest news and information about the micro industry. Some of this is provided by a character called (for reasons best known to him/herself) *Tiddles The Compunet*, whose big scoop at the time of writing is the inside story on The Great Prestel Hack.

• **Telesoftware** — if news is not your cup of tea, you could try downloading some of the software that's available. At the moment only a sparse number of titles are available. In the games bracket *Llamasoft*, *Mr Chip* and *Creative Sparks* (Thorn EMI) all have goodies for sale, although by far the biggest supplier is (you guessed it) *Commodore*. A lot of the software is free, one example being an excellent game by Jeff Minter called *Synco*.

Generally speaking, though, don't expect too much from the free software. The commercially available titles cost slightly less than they would in the shops. This seems only fair as the user is forking out the price of a disk or cassette instead of the manufacturer. One important point if you download commercial software, the modem used to receive it must be plugged into the Commodore 64 or the program will not run. For more serious users utilities, business, and educational software are available, everything from a spreadsheet to a spelling tutor.

• **The Jungle** — you can also download software here, but basically it's an area of Compunet given over almost entirely to users. In this instance the law of The Jungle is a sort of controlled anarchy. Primarily it's a bulletin board on to which users can put anything they like, and they do. The main directory divides The Jungle into six main areas — software, small ads, clubs and societies, hobby corner, user noticeboard, and jobsop. Of course there's nothing to stop you putting your email ad in the software section, but it helps if you try and maintain some semblance of order. The software here isn't always of the highest standard, but that's the price you pay for interactive freedom. The payoff is that this is one of the most interesting and amusing parts of Compunet.

• **MUD** — no description of Compunet would be complete without a bit of MUD. MUD or Multi User Dungeons is an adventure game originally developed at Essex University by Roy Trubshaw and Richard Bartle. It has now been made available on Compunet by *Century Software*.

The great thing about MUD is that any number of people can play it at the same time. Hence you can be wandering through The Land minding your own business when you bump into Fred the Warrior. You can have a chat with Fred, join forces with him and help each other out. Alternatively he may kill you. The permutations are therefore endless and you have to watch out for yourself.

If you're very good and reach the level of Wizard you become all powerful and everyone has to watch out for you. The only drawback to

MUD is the cost which is £3 per hour plus the phonebill while you are on-line.

## What you pay

Speaking of money, use of Compunet will involve spending some. Connect time between 8pm and 6pm is charged at a rate of £7 per hour. Compunet is free after 6pm and at weekends. Storage of a textframe costs 1p per day and if you sell any software Compunet will charge you 40% of the sale price for distribution. Compunet will bill you quarterly or when you run up £50 worth of debt, whichever is the sooner. I've found that using the system when it's free and exercising a certain amount of care over what you buy keeps costs reasonable.

## Which one is best?

Now we come to the crux of the matter. Which one is best? By now I'm sure most of you will have made up your own minds and besides, nothing's ever that simple. However, for the time being at least my money is on Micronet. When it comes down to it the main purpose of these systems is to provide information and Micronet 800 has stacks of it. It is also very broad in scope. As well as Commodore 64 information and software it offers information on other computers, software and peripherals.

Compunet on the other hand is comparatively small, but it's growing. The one big thing that it has going for it is its ease of access. In The Jungle you can set up your own bulletin board, club or society, even your own software house. Given an increase in the number of subscribers there are under 600 at present it's anybody's guess where this might lead.

The choice is therefore up to you. If you want lots of information now and your maximum input is unlikely to consist of no more than the odd piece of mail or a response frame then Micronet 800 is for you. If uploading your own software, articles, etc. and having a more positive input appeals you will probably get more satisfaction from Compunet.

But one last point may swing it. I have it on good authority that you can now log on to Micronet 800 using the Commodore modem and a piece of software by Viewdata available free on Compunet. You can therefore enjoy the best of both worlds for the cost of the Commodore modem, the software and the quarterly subscription to Micronet (£13).

So if having read this you still can't make your mind up, the answer is obvious. Use both. At £125 all in, it's not as horrendously expensive as you would have thought.



# Solar SOFTWARE



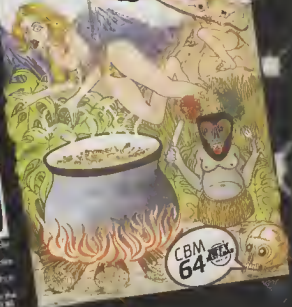
ACTUAL SCREEN SHOTS TAKEN FROM CBM



Young Jim he was a fearless lad he roamed the jungle trees. He went in search of Jane one day but she'd gone missing too. The natives were preparing her with warm water. He didn't rescue Jane in time she'd gone to the...

Solar SOFTWARE

# JUNGLE QUEST



CBM 64

Solar SOFTWARE

# MONKEY MAGIC



CBM 64



ACTUAL SCREEN SHOTS TAKEN FROM CBM



...the monkey magic...  
...the monkey magic...  
...the monkey magic...

...the monkey magic...  
...the monkey magic...  
...the monkey magic...

...the monkey magic...  
...the monkey magic...  
...the monkey magic...

# Wally A Merry Christmas



#### Christmas Twin Pack with Christmas Card

Spectrum 48K Pyjamarama Automania £11.95

Commodore 64 Pyjamarama Automania £12.95

Amstrad CPC 464 Pyjamarama Master Chess £12.95

## MIKRO-GEN

44 The Broadway Bracknell Berks U344 42777

NOW ON  
COMMODORE 64

The Chart  
Topping  
Flight Simulation  
Now On  
CBM 64.

# FIGHTER PILOT

## 48K SPECTRUM

BY D.K. MARSHALL

A SPECTACULAR FLIGHT SIMULATION OF THE  
WORLD'S MOST EXCITING JET FIGHTER WITH  
STUNNING 3D COCKPIT VIEW AND THE  
MOST REALISTIC 3D AIR-TO-AIR  
COMBAT EVER SEEN IN THE  
SPECTRUM

THE SPECTRUM SNAKE OFFERS  
A SPECIAL MEMORIAL AT THE  
PRICE OF

**SPECTRUM**  
**£7.95**  
**COMMODORE 64**  
CASSETTE DISK  
**£9.95 £14.95**  
inc VAT & p & p  
Joystick Compatible

#### OTHER

#### AMAZING FEATURES

- Landing and take-off from 4 forward drive steering on the ground
- Fully simulated performance
- Airfield attack by the enemy
- 3D clouds
- Turbulence and landing in fog
- 8 Pilot ratings, 8 weapons, 9 ground targets and map
- Artificial horizon radar and height computer
- ILS Flaps, 2 C and system failures
- 100% machine code with complete instructions and pilot notes



Definitely the best  
simulation for the  
Spectrum  
Crash Micro

**TT RACER**  
**£7.95**  
**48K Spectrum**



The supreme  
motorcycle racing  
simulation by the  
Spectrum TT Racer  
gives you on the hot seat  
racing for the toughest  
mile. You'll need to be  
a pro rider to take the  
winning lap as only the  
fastest will



**TOMAHAWK**  
**£7.95**  
**48K Spectrum**

For the action of  
fighter pilot, the last  
advanced helicopter  
simulation for the 2K  
Spectrum. Climb into  
the pilot seat of the  
machine, the most  
combat helicopter ever  
to take the sky.



**NIGHT GUNNER**  
**£8.95**

**48K Spectrum**  
Johnna Comstock  
The air battle where  
only axes survive  
with enemy fighters  
attacking from all  
directions. Guns,  
blazing, explosive 3D  
ground attack sorties  
and there's still the  
fight home

WIZARDS OF  
COMPUTER GAMES  
SOFTWARE



**DIGITAL  
INTEGRATION**



Watchmoor Trade Centre,  
Watchmoor Road, Camberley  
Surrey GU15 3AJ

<b>COMMODORE 64</b>		
Fighter Pilot Disk	£14.95	
Fighter Pilot Cassette	£9.95	
<b>SPECTRUM</b>		
Night Gunner	48K	£5.95
Fighter Pilot	48K	£7.95
Tomahawk	48K	Coming
TT Racer	48K	soon

All prices are in pounds sterling

On debit my Access Account No

Please send to Digital Integration, Dept

Watchmoor Trade Centre Watchmoor Road Camberley Surrey GU15 3AJ

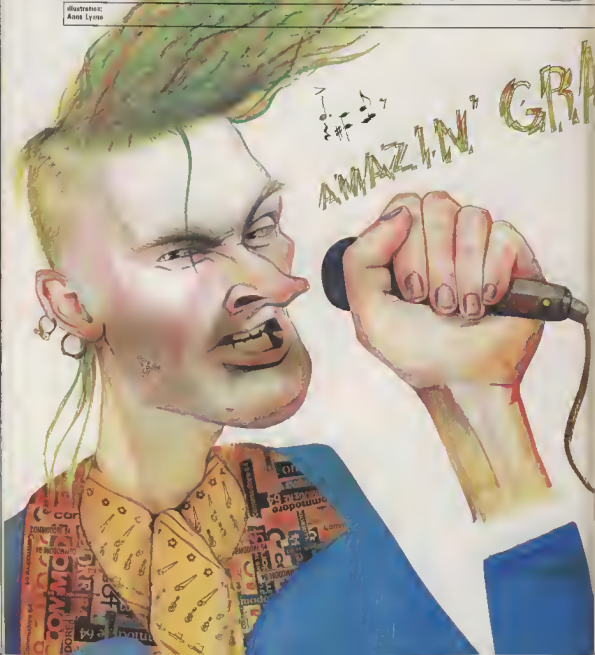


Tel: 041 524  
(0278) 584558

Trade and Export enquiries  
welcome. Lifetime Guarantee

# GOOD VIBES

Illustration:  
Ann Lyons



# FROM SID

## ADDING VIBRATO TO YOUR MUSIC

If you listen to a lot of music, whether it's pop, jazz or classical, you have almost certainly heard a singer or instrumentalist use vibrato. Vibrato warms the sound of a solo line and makes it more expressive. In fact, we sometimes say that vibrato "humanizes" the sound — just what the doctor ordered for that cold silicon fish inside the Commodore 64 that we call the SID chip.

It's not especially difficult to add vibrato on the Commodore 64, but before getting into the how-to aspect of things we had better figure out just what vibrato is.

Actually there are a number of different ways to produce vibrato, but basically it consists of a regular variation in pitch and/or loudness. Think of a violinist or a guitarist: on a held note the player's finger rocks back and forth on the fingerboard. This "vibrating" of the hand causes the pitch to rise and

fall. Or think of a jazz trombonist playing a ballad. The trombone slide is moved back and forth on a held note, causing a similar effect. These are both examples of pitch vibrato, although there is some variation in loudness also.

Some wind instruments, most notably the flute, vary the wind pressure to produce a vibrato. This produces, as you might guess, a variation in the loudness of the sound, along with a slight variation in the pitch.

The amount and speed of the variation are quite important. For example, you would use a wider, slower, more noticeable vibrato for jazz than for classical music. Or, if you're an opera fan, think of the opera singer who has sung too many Wagner operas and thus has nothing left but vibrato — he or she probably won't be coming back for an encore.

### Producing a vibrato

The easiest vibrato to

produce on the Commodore 64 is a pitch vibrato. Type in this program to see how:

As you can see from the REM statements in lines 50 and 70, this program simply raises and lowers the pitch a little bit. How did I figure out how far to go each way? By experimenting, of course. The speed of the vibrato is controlled by the STEP2 and STEP3 statements: STEP1 would produce a slower vibrato, STEP3 a faster vibrato.

If you want to, you can change the amount of vibrato by changing the amount that "A" is allowed to change: if "A" goes up to 245 and down to 145, for example, you'll get a far different sound.

The problem with this technique is that it gets in the way of the program. If you would like an automatic pitch vibrato that works on the interrupt system so you don't have to worry about all of those FOR/NEXT loops, type in this next program:

continued on page 32

## PART ONE

```
10 A=100:SID=34272:FORL=810:SID=24:POKE1,0:INSTRUMENTALIZE
20 POKESID=24,131:POKESID=5,32:POKESID=9,240:SETSCHEM VOLUME AND ADDR
30 POKESID=10,160:POKESID=13,161:POKESID=14,17:POKESID=15,161:POKESID=16,161:POKESID=17,161:POKESID=18,161:POKESID=19,161:POKESID=20,161:POKESID=21,161:POKESID=22,161:POKESID=23,161:POKESID=24,161:POKESID=25,161:POKESID=26,161:POKESID=27,161:POKESID=28,161:POKESID=29,161:POKESID=30,161:POKESID=31,161:POKESID=32,161:POKESID=33,161:POKESID=34,161:POKESID=35,161:POKESID=36,161:POKESID=37,161:POKESID=38,161:POKESID=39,161:POKESID=40,161:POKESID=41,161:POKESID=42,161:POKESID=43,161:POKESID=44,161:POKESID=45,161:POKESID=46,161:POKESID=47,161:POKESID=48,161:POKESID=49,161:POKESID=50,161:POKESID=51,161:POKESID=52,161:POKESID=53,161:POKESID=54,161:POKESID=55,161:POKESID=56,161:POKESID=57,161:POKESID=58,161:POKESID=59,161:POKESID=60,161:POKESID=61,161:POKESID=62,161:POKESID=63,161:POKESID=64,161:POKESID=65,161:POKESID=66,161:POKESID=67,161:POKESID=68,161:POKESID=69,161:POKESID=70,161:POKESID=71,161:POKESID=72,161:POKESID=73,161:POKESID=74,161:POKESID=75,161:POKESID=76,161:POKESID=77,161:POKESID=78,161:POKESID=79,161:POKESID=80,161:POKESID=81,161:POKESID=82,161:POKESID=83,161:POKESID=84,161:POKESID=85,161:POKESID=86,161:POKESID=87,161:POKESID=88,161:POKESID=89,161:POKESID=90,161:POKESID=91,161:POKESID=92,161:POKESID=93,161:POKESID=94,161:POKESID=95,161:POKESID=96,161:POKESID=97,161:POKESID=98,161:POKESID=99,161:POKESID=100,161:POKESID=101,161:POKESID=102,161:POKESID=103,161:POKESID=104,161:POKESID=105,161:POKESID=106,161:POKESID=107,161:POKESID=108,161:POKESID=109,161:POKESID=110,161:POKESID=111,161:POKESID=112,161:POKESID=113,161:POKESID=114,161:POKESID=115,161:POKESID=116,161:POKESID=117,161:POKESID=118,161:POKESID=119,161:POKESID=120,161:POKESID=121,161:POKESID=122,161:POKESID=123,161:POKESID=124,161:POKESID=125,161:POKESID=126,161:POKESID=127,161:POKESID=128,161:POKESID=129,161:POKESID=130,161:POKESID=131,161:POKESID=132,161:POKESID=133,161:POKESID=134,161:POKESID=135,161:POKESID=136,161:POKESID=137,161:POKESID=138,161:POKESID=139,161:POKESID=140,161:POKESID=141,161:POKESID=142,161:POKESID=143,161:POKESID=144,161:POKESID=145,161:POKESID=146,161:POKESID=147,161:POKESID=148,161:POKESID=149,161:POKESID=150,161:POKESID=151,161:POKESID=152,161:POKESID=153,161:POKESID=154,161:POKESID=155,161:POKESID=156,161:POKESID=157,161:POKESID=158,161:POKESID=159,161:POKESID=160,161:POKESID=161,161:POKESID=162,161:POKESID=163,161:POKESID=164,161:POKESID=165,161:POKESID=166,161:POKESID=167,161:POKESID=168,161:POKESID=169,161:POKESID=170,161:POKESID=171,161:POKESID=172,161:POKESID=173,161:POKESID=174,161:POKESID=175,161:POKESID=176,161:POKESID=177,161:POKESID=178,161:POKESID=179,161:POKESID=180,161:POKESID=181,161:POKESID=182,161:POKESID=183,161:POKESID=184,161:POKESID=185,161:POKESID=186,161:POKESID=187,161:POKESID=188,161:POKESID=189,161:POKESID=190,161:POKESID=191,161:POKESID=192,161:POKESID=193,161:POKESID=194,161:POKESID=195,161:POKESID=196,161:POKESID=197,161:POKESID=198,161:POKESID=199,161:POKESID=200,161:POKESID=201,161:POKESID=202,161:POKESID=203,161:POKESID=204,161:POKESID=205,161:POKESID=206,161:POKESID=207,161:POKESID=208,161:POKESID=209,161:POKESID=210,161:POKESID=211,161:POKESID=212,161:POKESID=213,161:POKESID=214,161:POKESID=215,161:POKESID=216,161:POKESID=217,161:POKESID=218,161:POKESID=219,161:POKESID=220,161:POKESID=221,161:POKESID=222,161:POKESID=223,161:POKESID=224,161:POKESID=225,161:POKESID=226,161:POKESID=227,161:POKESID=228,161:POKESID=229,161:POKESID=230,161:POKESID=231,161:POKESID=232,161:POKESID=233,161:POKESID=234,161:POKESID=235,161:POKESID=236,161:POKESID=237,161:POKESID=238,161:POKESID=239,161:POKESID=240,161:POKESID=241,161:POKESID=242,161:POKESID=243,161:POKESID=244,161:POKESID=245,161:POKESID=246,161:POKESID=247,161:POKESID=248,161:POKESID=249,161:POKESID=250,161:POKESID=251,161:POKESID=252,161:POKESID=253,161:POKESID=254,161:POKESID=255,161:POKESID=256,161:POKESID=257,161:POKESID=258,161:POKESID=259,161:POKESID=260,161:POKESID=261,161:POKESID=262,161:POKESID=263,161:POKESID=264,161:POKESID=265,161:POKESID=266,161:POKESID=267,161:POKESID=268,161:POKESID=269,161:POKESID=270,161:POKESID=271,161:POKESID=272,161:POKESID=273,161:POKESID=274,161:POKESID=275,161:POKESID=276,161:POKESID=277,161:POKESID=278,161:POKESID=279,161:POKESID=280,161:POKESID=281,161:POKESID=282,161:POKESID=283,161:POKESID=284,161:POKESID=285,161:POKESID=286,161:POKESID=287,161:POKESID=288,161:POKESID=289,161:POKESID=290,161:POKESID=291,161:POKESID=292,161:POKESID=293,161:POKESID=294,161:POKESID=295,161:POKESID=296,161:POKESID=297,161:POKESID=298,161:POKESID=299,161:POKESID=300,161:POKESID=301,161:POKESID=302,161:POKESID=303,161:POKESID=304,161:POKESID=305,161:POKESID=306,161:POKESID=307,161:POKESID=308,161:POKESID=309,161:POKESID=310,161:POKESID=311,161:POKESID=312,161:POKESID=313,161:POKESID=314,161:POKESID=315,161:POKESID=316,161:POKESID=317,161:POKESID=318,161:POKESID=319,161:POKESID=320,161:POKESID=321,161:POKESID=322,161:POKESID=323,161:POKESID=324,161:POKESID=325,161:POKESID=326,161:POKESID=327,161:POKESID=328,161:POKESID=329,161:POKESID=330,161:POKESID=331,161:POKESID=332,161:POKESID=333,161:POKESID=334,161:POKESID=335,161:POKESID=336,161:POKESID=337,161:POKESID=338,161:POKESID=339,161:POKESID=340,161:POKESID=341,161:POKESID=342,161:POKESID=343,161:POKESID=344,161:POKESID=345,161:POKESID=346,161:POKESID=347,161:POKESID=348,161:POKESID=349,161:POKESID=350,161:POKESID=351,161:POKESID=352,161:POKESID=353,161:POKESID=354,161:POKESID=355,161:POKESID=356,161:POKESID=357,161:POKESID=358,161:POKESID=359,161:POKESID=360,161:POKESID=361,161:POKESID=362,161:POKESID=363,161:POKESID=364,161:POKESID=365,161:POKESID=366,161:POKESID=367,161:POKESID=368,161:POKESID=369,161:POKESID=370,161:POKESID=371,161:POKESID=372,161:POKESID=373,161:POKESID=374,161:POKESID=375,161:POKESID=376,161:POKESID=377,161:POKESID=378,161:POKESID=379,161:POKESID=380,161:POKESID=381,161:POKESID=382,161:POKESID=383,161:POKESID=384,161:POKESID=385,161:POKESID=386,161:POKESID=387,161:POKESID=388,161:POKESID=389,161:POKESID=390,161:POKESID=391,161:POKESID=392,161:POKESID=393,161:POKESID=394,161:POKESID=395,161:POKESID=396,161:POKESID=397,161:POKESID=398,161:POKESID=399,161:POKESID=400,161:POKESID=401,161:POKESID=402,161:POKESID=403,161:POKESID=404,161:POKESID=405,161:POKESID=406,161:POKESID=407,161:POKESID=408,161:POKESID=409,161:POKESID=410,161:POKESID=411,161:POKESID=412,161:POKESID=413,161:POKESID=414,161:POKESID=415,161:POKESID=416,161:POKESID=417,161:POKESID=418,161:POKESID=419,161:POKESID=420,161:POKESID=421,161:POKESID=422,161:POKESID=423,161:POKESID=424,161:POKESID=425,161:POKESID=426,161:POKESID=427,161:POKESID=428,161:POKESID=429,161:POKESID=430,161:POKESID=431,161:POKESID=432,161:POKESID=433,161:POKESID=434,161:POKESID=435,161:POKESID=436,161:POKESID=437,161:POKESID=438,161:POKESID=439,161:POKESID=440,161:POKESID=441,161:POKESID=442,161:POKESID=443,161:POKESID=444,161:POKESID=445,161:POKESID=446,161:POKESID=447,161:POKESID=448,161:POKESID=449,161:POKESID=450,161:POKESID=451,161:POKESID=452,161:POKESID=453,161:POKESID=454,161:POKESID=455,161:POKESID=456,161:POKESID=457,161:POKESID=458,161:POKESID=459,161:POKESID=460,161:POKESID=461,161:POKESID=462,161:POKESID=463,161:POKESID=464,161:POKESID=465,161:POKESID=466,161:POKESID=467,161:POKESID=468,161:POKESID=469,161:POKESID=470,161:POKESID=471,161:POKESID=472,161:POKESID=473,161:POKESID=474,161:POKESID=475,161:POKESID=476,161:POKESID=477,161:POKESID=478,161:POKESID=479,161:POKESID=480,161:POKESID=481,161:POKESID=482,161:POKESID=483,161:POKESID=484,161:POKESID=485,161:POKESID=486,161:POKESID=487,161:POKESID=488,161:POKESID=489,161:POKESID=490,161:POKESID=491,161:POKESID=492,161:POKESID=493,161:POKESID=494,161:POKESID=495,161:POKESID=496,161:POKESID=497,161:POKESID=498,161:POKESID=499,161:POKESID=500,161:POKESID=501,161:POKESID=502,161:POKESID=503,161:POKESID=504,161:POKESID=505,161:POKESID=506,161:POKESID=507,161:POKESID=508,161:POKESID=509,161:POKESID=510,161:POKESID=511,161:POKESID=512,161:POKESID=513,161:POKESID=514,161:POKESID=515,161:POKESID=516,161:POKESID=517,161:POKESID=518,161:POKESID=519,161:POKESID=520,161:POKESID=521,161:POKESID=522,161:POKESID=523,161:POKESID=524,161:POKESID=525,161:POKESID=526,161:POKESID=527,161:POKESID=528,161:POKESID=529,161:POKESID=530,161:POKESID=531,161:POKESID=532,161:POKESID=533,161:POKESID=534,161:POKESID=535,161:POKESID=536,161:POKESID=537,161:POKESID=538,161:POKESID=539,161:POKESID=540,161:POKESID=541,161:POKESID=542,161:POKESID=543,161:POKESID=544,161:POKESID=545,161:POKESID=546,161:POKESID=547,161:POKESID=548,161:POKESID=549,161:POKESID=550,161:POKESID=551,161:POKESID=552,161:POKESID=553,161:POKESID=554,161:POKESID=555,161:POKESID=556,161:POKESID=557,161:POKESID=558,161:POKESID=559,161:POKESID=560,161:POKESID=561,161:POKESID=562,161:POKESID=563,161:POKESID=564,161:POKESID=565,161:POKESID=566,161:POKESID=567,161:POKESID=568,161:POKESID=569,161:POKESID=570,161:POKESID=571,161:POKESID=572,161:POKESID=573,161:POKESID=574,161:POKESID=575,161:POKESID=576,161:POKESID=577,161:POKESID=578,161:POKESID=579,161:POKESID=580,161:POKESID=581,161:POKESID=582,161:POKESID=583,161:POKESID=584,161:POKESID=585,161:POKESID=586,161:POKESID=587,161:POKESID=588,161:POKESID=589,161:POKESID=590,161:POKESID=591,161:POKESID=592,161:POKESID=593,161:POKESID=594,161:POKESID=595,161:POKESID=596,161:POKESID=597,161:POKESID=598,161:POKESID=599,161:POKESID=600,161:POKESID=601,161:POKESID=602,161:POKESID=603,161:POKESID=604,161:POKESID=605,161:POKESID=606,161:POKESID=607,161:POKESID=608,161:POKESID=609,161:POKESID=610,161:POKESID=611,161:POKESID=612,161:POKESID=613,161:POKESID=614,161:POKESID=615,161:POKESID=616,161:POKESID=617,161:POKESID=618,161:POKESID=619,161:POKESID=620,161:POKESID=621,161:POKESID=622,161:POKESID=623,161:POKESID=624,161:POKESID=625,161:POKESID=626,161:POKESID=627,161:POKESID=628,161:POKESID=629,161:POKESID=630,161:POKESID=631,161:POKESID=632,161:POKESID=633,161:POKESID=634,161:POKESID=635,161:POKESID=636,161:POKESID=637,161:POKESID=638,161:POKESID=639,161:POKESID=640,161:POKESID=641,161:POKESID=642,161:POKESID=643,161:POKESID=644,161:POKESID=645,161:POKESID=646,161:POKESID=647,161:POKESID=648,161:POKESID=649,161:POKESID=650,161:POKESID=651,161:POKESID=652,161:POKESID=653,161:POKESID=654,161:POKESID=655,161:POKESID=656,161:POKESID=657,161:POKESID=658,161:POKESID=659,161:POKESID=660,161:POKESID=661,161:POKESID=662,161:POKESID=663,161:POKESID=664,161:POKESID=665,161:POKESID=666,161:POKESID=667,161:POKESID=668,161:POKESID=669,161:POKESID=670,161:POKESID=671,161:POKESID=672,161:POKESID=673,161:POKESID=674,161:POKESID=675,161:POKESID=676,161:POKESID=677,161:POKESID=678,161:POKESID=679,161:POKESID=680,161:POKESID=681,161:POKESID=682,161:POKESID=683,161:POKESID=684,161:POKESID=685,161:POKESID=686,161:POKESID=687,161:POKESID=688,161:POKESID=689,161:POKESID=690,161:POKESID=691,161:POKESID=692,161:POKESID=693,161:POKESID=694,161:POKESID=695,161:POKESID=696,161:POKESID=697,161:POKESID=698,161:POKESID=699,161:POKESID=700,161:POKESID=701,161:POKESID=702,161:POKESID=703,161:POKESID=704,161:POKESID=705,161:POKESID=706,161:POKESID=707,161:POKESID=708,161:POKESID=709,161:POKESID=710,161:POKESID=711,161:POKESID=712,161:POKESID=713,161:POKESID=714,161:POKESID=715,161:POKESID=716,161:POKESID=717,161:POKESID=718,161:POKESID=719,161:POKESID=720,161:POKESID=721,161:POKESID=722,161:POKESID=723,161:POKESID=724,161:POKESID=725,161:POKESID=726,161:POKESID=727,161:POKESID=728,161:POKESID=729,161:POKESID=730,161:POKESID=731,161:POKESID=732,161:POKESID=733,161:POKESID=734,161:POKESID=735,161:POKESID=736,161:POKESID=737,161:POKESID=738,161:POKESID=739,161:POKESID=740,161:POKESID=741,161:POKESID=742,161:POKESID=743,161:POKESID=744,161:POKESID=745,161:POKESID=746,161:POKESID=747,161:POKESID=748,161:POKESID=749,161:POKESID=750,161:POKESID=751,161:POKESID=752,161:POKESID=753,161:POKESID=754,161:POKESID=755,161:POKESID=756,161:POKESID=757,161:POKESID=758,161:POKESID=759,161:POKESID=760,161:POKESID=761,161:POKESID=762,161:POKESID=763,161:POKESID=764,161:POKESID=765,161:POKESID=766,161:POKESID=767,161:POKESID=768,161:POKESID=769,161:POKESID=770,161:POKESID=771,161:POKESID=772,161:POKESID=773,161:POKESID=774,161:POKESID=775,161:POKESID=776,161:POKESID=777,161:POKESID=778,161:POKESID=779,161:POKESID=780,161:POKESID=781,161:POKESID=782,161:POKESID=783,161:POKESID=784,161:POKESID=785,161:POKESID=786,161:POKESID=787,161:POKESID=788,161:POKESID=789,161:POKESID=790,161:POKESID=791,161:POKESID=792,161:POKESID=793,161:POKESID=794,161:POKESID=795,161:POKESID=796,161:POKESID=797,161:POKESID=798,161:POKESID=799,161:POKESID=800,161:POKESID=801,161:POKESID=802,161:POKESID=803,161:POKESID=804,161:POKESID=805,161:POKESID=806,161:POKESID=807,161:POKESID=808,161:POKESID=809,161:POKESID=810,161:POKESID=811,161:POKESID=812,161:POKESID=813,161:POKESID=814,161:POKESID=815,161:POKESID=816,161:POKESID=817,161:POKESID=818,161:POKESID=819,161:POKESID=820,161:POKESID=821,161:POKESID=822,161:POKESID=823,161:POKESID=824,161:POKESID=825,161:POKESID=826,161:POKESID=827,161:POKESID=828,161:POKESID=829,161:POKESID=830,161:POKESID=831,161:POKESID=832,161:POKESID=833,161:POKESID=834,161:POKESID=835,161:POKESID=836,161:POKESID=837,161:POKESID=838,161:POKESID=839,161:POKESID=840,161:POKESID=841,161:POKESID=842,161:POKESID=843,161:POKESID=844,161:POKESID=845,161:POKESID=846,161:POKESID=847,161:POKESID=848,161:POKESID=849,161:POKESID=850,161:POKESID=851,161:POKESID=852,161:POKESID=853,161:POKESID=854,161:POKESID=855,161:POKESID=856,161:POKESID=857,161:POKESID=858,161:POKESID=859,161:POKESID=860,161:POKESID=861,161:POKESID=862,161:POKESID=863,161:POKESID=864,161:POKESID=865,161:POKESID=866,161:POKESID=867,161:POKESID=868,161:POKESID=869,161:POKESID=8
```



NOW  
AVAILABLE

# CLIFF HANGER

AUTHOR - JAMES DAY ORIGINAL MUSIC - BRIAN DOE

Thrill to the cartoon style action of *Cliff Hanger*, a really original, Wild West game. As Cliff the hero, you've got to stop the bandito shooting up the canyon. But with its own brand of wacky cartoon action fun, things simply aren't as they seem in *Cliff Hanger*. For a start, the boulder you throw at the ol' bandito may just come bouncing back at you.

*Cliff Hanger* incorporates all the elements that have made New Generation games best sellers for the Spectrum, such as original ideas, superb graphics and hilarious happenings - but now it's available first for the Commodore 64.

Featuring 50 separate screens, three levels of difficulty, one or two players scoring, Hall of fame and joystick compatibility or user defined keys, *Cliff Hanger* is set to be **THE** Commodore games playing sensation. Available from any good software store for just £7.95.

Selected titles of New Generation Software  
are available from your local computer store  
and larger branches of

John Menzies

WHSNUTTE



WOOLWORTH

Spectrum

shoota  
ids, then  
ta you!

NOW  
AVAILABLE

# Shoot the Rapids

AUTHOR - PAUL BUNN

Ever wondered what it would be like to face the fierce white water in a top class canoeist slalom run? Well wonder no more because you can enjoy the fast action thrill of competitive canoeing from the comfort of your own armchair with Shoot the Rapids.

It's a game that involves real skill because you must move your joystick to simulate paddling action. You must get through the gates of the slalom course in the fastest time possible, while avoiding the river bank and rocks. There are also extra hazards like rogue speed boats and interfering beavers to worry about.

This multi level game features increasingly difficult river courses with superb graphics and smooth scrolling along the river. Qualifying times have to be reached to move onto the next course.

With Hall of Fame, one or two player scoring and joystick compatibility, Shoot the Rapids is probably the best sports action simulation game devised to date. Available from any good software store for just £7.95.

New  
Generation  
Software

NEW GENERATION SOFTWARE  
FAIRPORT Bldg B42 4TD  
Tel 0225 314594



New Generation products are sold according to  
their terms of trade and conditions of sale

# GOOD VIBES FROM SID

Line 10 and lines 500-680 provide the automatic vibrato; lines 20-100 are there just to provide a little demonstration music. With a little modification, this program will provide some rather astonishing sounds, so, if you feel inclined, have a go at it.

Using the automatic vibrato in your own music programs is quite simple. Just include line 10 and lines 500-680 (line numbers are not important but make sure that your program includes its own READ/DATA lines that it reads the right DATA at the right time) in your program.

When you want a vibrato in voice 1, use SYS49157, and, instead of POKing SID and SID+1 with the pitch information, POKE 253 and 254. Make sure that you POKE 254 or you will occasionally get some unexpected sounds.

Then start the note by POKing SID+4 just as you normally would. Turn the vibrato off with SYS49170, and remember that when the vibrato is off you need to go back to POKing the pitch into SID and SID+1.

There are many ways to get a vibrato from SID. You can set voice 3 to a very low frequency, then set up a loop that POKEs SID, PEEK(S+17) (the read register for voice 3 frequency). A professional synthesizer player would say

that this method uses voice 3 as a Low Frequency Oscillator or LFO.

The disadvantage of this technique is that it uses up voice three without making

use of its sound — something that be avoided on a synthesizer with only three voices. Another way is to use the envelope and gating controls to get an intensity (loudness)



vibrato, although I've never gotten one that sounded really good with this method. Maybe one of the biffins amongst you can do better.

## Sidney Sawtooth plays on

You can, however, combine all of the voices to create one complex sound with an interesting intensity vibrato. The next program uses all three voices deliberately set a little out of tune with each other (detuning), ring modulation, and envelopes (ADSR's) set to different values to make a richer sound than any one voice could provide for this not-unpopular folk melody.

Notice in line 110 that the pitch of voice 2 is set a little under voice 1 and the pitch of voice 3 is set a little above voice 1. This "do tuning", along with the ring modulation in voice 3 (more about that in a later article) causes a phenomenon called "beating" which gives the effect of vibrato. Here's how.

Think of the sound waves coming out of your speaker as a series of compressions and rarefactions of the air. The closer together these compressions and rarefactions are the higher the pitch sounds to you.

If two pitches are being fed into your speaker, their compressions and rarefactions will sometimes augment each other, and sometimes cancel each other out. If the two are very close to each other in pitch, they will augment each other and then cancel each other out slowly enough that you will hear the effect as an intensity vibrato.

If you listen to this program through a good hi-fi set, you will probably hear four notes in each of the last two chords. No, I didn't find a hidden fourth voice in SID, although I wish someone would. When certain intervals are tuned just right, the same acoustical phenomenon that produces the vibrato in this example will give the effect of a fourth voice. Here's what happens.

The cycle of augmented and diminished volume that produces the vibrato is itself a pattern of compression and rarefaction of the air. If we speed that pattern up enough, we will hear it as a note itself instead of as a vibrato. One other thing to notice: lines 80 and 90 cause the slide effect between notes.

That's three ways to produce a vibrato on your Commodore 64 — who said SID couldn't sing?

## PART THREE

```

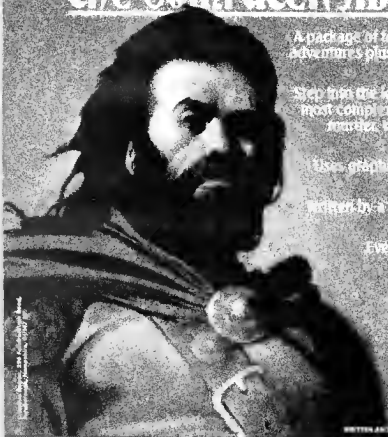
10 B=54272:FORL=RTD=24:POKE1,8:NEXT:POKE24,31:POKE25,1:POKE992,65
20 POKE993,17:POKE994,21:POKE8,15,19:POKE18,8
30 POKE3,1,18:POKE12,1,56:POKE19,104:POKE6,198:POKE13,213:POKE26,244
40 POKE2,1,18:POKE12,1,56:POKE19,104:POKE6,198:POKE13,213:POKE26,244
50 POKE3,2,2:POKE289,4:POKE3,7,(A-17):POKE14,(A+19):POKE4,65:POKE11,17
60 POKE3,2,2:POKE289,4:POKE3,7,(A-17):POKE14,(A+19):POKE4,65:POKE11,17
70 POKE18,21:FORL=1:POKE1,8:NEXT:READ(READ) READ(READ) POKE1,8,84:POKE1,8,84
80 POKE1,1,18:POKE1,8,84:FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
90 NEXT:Z=1:IFZ=34:THENPOKE4,248:GOTO138
100 B=54272
110 READ(READ) POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
120 POKE1,1,17:POKE1,8,84:FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
130 POKE1,1,18:POKE1,8,84:FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
140 POKE1,1,18:POKE1,8,84:FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
150 POKE1,1,18:POKE1,8,84:FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
160 POKE1,1,18:POKE1,8,84:FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
170 FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
180 FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
190 FORL=1:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84:POKE1,8,84
200 DATA28,78,18,25,1,38,158,25,31,1,145,26,31,25,-1,38,26,25,31,1
210 DATA145,158,31,28,-1,49,78,26,25,-1
220 DATA38,158,25,31,1,18,28,78,18,25,-1
230 DATA289,158,18,18,8,289,78,18,25,-1
240 DATA289,158,31,28,-1,49,78,26,25,-1
250 DATA145,158,31,28,-1,49,78,26,25,-1
260 DATA145,158,31,28,-1,49,78,26,25,-1
270 DATA145,158,31,28,-1,49,78,26,25,-1
280 DATA145,158,31,28,-1,49,78,26,25,-1
290 DATA145,158,31,28,-1,49,78,26,25,-1
300 DATA145,158,31,28,-1,49,78,26,25,-1
310 DATA145,158,31,28,-1,49,78,26,25,-1
320 DATA145,158,31,28,-1,49,78,26,25,-1
330 DATA145,158,31,28,-1,49,78,26,25,-1
340 DATA145,158,31,28,-1,49,78,26,25,-1
350 DATA145,158,31,28,-1,49,78,26,25,-1
360 DATA145,158,31,28,-1,49,78,26,25,-1
370 DATA145,158,31,28,-1,49,78,26,25,-1
380 DATA145,158,31,28,-1,49,78,26,25,-1
390 DATA145,158,31,28,-1,49,78,26,25,-1
400 DATA145,158,31,28,-1,49,78,26,25,-1
410 DATA145,158,31,28,-1,49,78,26,25,-1
420 DATA145,158,31,28,-1,49,78,26,25,-1
430 DATA145,158,31,28,-1,49,78,26,25,-1
440 DATA145,158,31,28,-1,49,78,26,25,-1
450 DATA145,158,31,28,-1,49,78,26,25,-1
460 DATA145,158,31,28,-1,49,78,26,25,-1
470 DATA145,158,31,28,-1,49,78,26,25,-1
480 DATA145,158,31,28,-1,49,78,26,25,-1
490 DATA145,158,31,28,-1,49,78,26,25,-1
500 DATA145,158,31,28,-1,49,78,26,25,-1
510 DATA145,158,31,28,-1,49,78,26,25,-1
520 DATA145,158,31,28,-1,49,78,26,25,-1
530 DATA145,158,31,28,-1,49,78,26,25,-1
540 DATA145,158,31,28,-1,49,78,26,25,-1
550 DATA145,158,31,28,-1,49,78,26,25,-1
560 DATA145,158,31,28,-1,49,78,26,25,-1
570 DATA145,158,31,28,-1,49,78,26,25,-1
580 DATA145,158,31,28,-1,49,78,26,25,-1
590 DATA145,158,31,28,-1,49,78,26,25,-1
600 DATA145,158,31,28,-1,49,78,26,25,-1
610 DATA145,158,31,28,-1,49,78,26,25,-1
620 DATA145,158,31,28,-1,49,78,26,25,-1
630 DATA145,158,31,28,-1,49,78,26,25,-1
640 DATA145,158,31,28,-1,49,78,26,25,-1
650 DATA145,158,31,28,-1,49,78,26,25,-1
660 DATA145,158,31,28,-1,49,78,26,25,-1
670 DATA145,158,31,28,-1,49,78,26,25,-1
680 DATA145,158,31,28,-1,49,78,26,25,-1
690 DATA145,158,31,28,-1,49,78,26,25,-1
700 DATA145,158,31,28,-1,49,78,26,25,-1
710 DATA145,158,31,28,-1,49,78,26,25,-1
720 DATA145,158,31,28,-1,49,78,26,25,-1
730 DATA145,158,31,28,-1,49,78,26,25,-1
740 DATA145,158,31,28,-1,49,78,26,25,-1
750 DATA145,158,31,28,-1,49,78,26,25,-1
760 DATA145,158,31,28,-1,49,78,26,25,-1
770 DATA145,158,31,28,-1,49,78,26,25,-1
780 DATA145,158,31,28,-1,49,78,26,25,-1
790 DATA145,158,31,28,-1,49,78,26,25,-1
800 DATA145,158,31,28,-1,49,78,26,25,-1
810 DATA145,158,31,28,-1,49,78,26,25,-1
820 DATA145,158,31,28,-1,49,78,26,25,-1
830 DATA145,158,31,28,-1,49,78,26,25,-1
840 DATA145,158,31,28,-1,49,78,26,25,-1
850 DATA145,158,31,28,-1,49,78,26,25,-1
860 DATA145,158,31,28,-1,49,78,26,25,-1
870 DATA145,158,31,28,-1,49,78,26,25,-1
880 DATA145,158,31,28,-1,49,78,26,25,-1
890 DATA145,158,31,28,-1,49,78,26,25,-1
900 DATA145,158,31,28,-1,49,78,26,25,-1
910 DATA145,158,31,28,-1,49,78,26,25,-1
920 DATA145,158,31,28,-1,49,78,26,25,-1
930 DATA145,158,31,28,-1,49,78,26,25,-1
940 DATA145,158,31,28,-1,49,78,26,25,-1
950 DATA145,158,31,28,-1,49,78,26,25,-1
960 DATA145,158,31,28,-1,49,78,26,25,-1
970 DATA145,158,31,28,-1,49,78,26,25,-1
980 DATA145,158,31,28,-1,49,78,26,25,-1
990 DATA145,158,31,28,-1,49,78,26,25,-1
1000 DATA145,158,31,28,-1,49,78,26,25,-1

```



# MACBETH

## THE COMPUTER ADVENTURE



A package of four completely different adventures plus four character analysis programs

Step into the leading role in one of the most complex and intriguing works of literature, treachery and a destiny never conceived

Uses graphics as an integral part of the problem solving

Written by a team of trained users of expert

Even the most experienced users will find this a new and challenging

Let your computer stretch your imagination

Now only **£14.95**

WRITTEN AND DESIGNED BY THE CREATIVE SPARKS

**Available from**  
All good computer software stockists

**Send me** (tick as required)

- ☐ My local stockist's address  
☐ Your full list of games  
☐ 5 copy/ies of this game

**THREE 293 at £14.95 each** £                      p  
+ single R&P sum                      30p  
Total to send                      £                      p

### Method of payment

By cheque or PO (no cash) made payable to **TECS**



☐ By Access or

☐ Barclaycard

Enter card no

\_\_\_\_\_

Sign below.

Credit card sales UK buyers only  
Response within 21 days

Creative Sparks,  
Department M0,  
296 Farnborough Road,  
Farnborough, Hampshire GU14 7NF  
Telephone 02521 518364

Name \_\_\_\_\_

Address \_\_\_\_\_

CU 01/85





# How to teach your Micro a thing or two

Thousands of home computer owners have yet to discover their microcomputer's potential to help with many of the problems and decisions that come up every day in the home or office.

Perhaps you have always promised yourself that you would teach yourself programming, but have been put off by manuals which seem to assume a lifetime spent studying computer science and mathematics. Maybe you have looked at other computer books, but have yet to find one which is free of unnecessary jargon or where the program examples bear some relevance to real life and not space invaders.

Relax, your search is over.

The 'Learn BASIC' tutorials from Logic 3 are the latest development of a teaching method pioneered by Professor Andrew Colin and perfected

by testing on 3 generations of students at Strathelyde University. The 'Strathelyde Method' has been translated into 8 languages and used by over 300,000 microcomputer users.

'Learn BASIC' is a jargon free, step by step, course in computer programming, which explains everything clearly in English, not computer talk. In a matter of hours you will be writing your first programs.

'Learn BASIC' is designed for people who want to keep abreast of the computer age, for people who realise that understanding computers is a key to future success at work, at school, and as a parent.

Get 'Learn BASIC' and teach your micro how to be useful! (Available from major branches of W.H. Smiths, Boots, Laskys, Greens, John Menzies and better computer shops nationwide.)

Please send me more information about your:-

(Tick appropriate box)

- 'Learn BASIC' tutorials ☐  
 Logic 3 Spectrum Club ☐  
 Logic 3 Commodore Club ☐  
 (64 and VIC owners only)

Name .....  
 (BLOCK CAPITALS PLEASE)



I have a:-

- Sinclair Spectrum ☐  
 Commodore 64 ☐  
 Acorn Electron ☐  
 BBC Microcomputer ☐  
 Dragon ☐

Address .....

.....(Postcode).....

To Logic 3 Ltd., FREEPOST, Mounthatten House, Victoria Street, Windsor SL4 1HE

TELEGRAM

**URGENT!**



"The best simulation around ... A must for budding pilots" - P.C.N.

"I would choose Doctor Soft's 747 ... Instrumentation clear and unfussy ... graphics are good ... smooth and realistic" - Software Today

**NO. 1 BBC FLIGHT SIMULATOR\*, 747, NOW AVAILABLE ON  
COMMODORE 64 STOP SPECIAL 64K VERSION EXPLOITS  
FULL COMMODORE GRAPHICS AND SOUND CAPABILITIES  
STOP OVER 80 NAVIGATIONAL AIDS STOP OVER 18  
AIRFIELDS STOP EXTENDED GROUND DETAIL COVERS UK -  
N.W. EUROPE STOP COMPREHENSIVE PILOT WRITTEN  
FLYING MANUAL & CHART STOP DAY/NIGHT & VARIABLE  
WEATHER MODES STOP ILS VOR DME NAVIGATION STOP**

747 and other Doctor Soft programs are available from:

- W H SMITH • BOOTS • JOHN MENZIE
- MOST LEADING DEALERS • BY DIRECT MAIL ORDER (SEE BELOW)

ELECTRON

747 is no ordinary flight simulator. BBC owners know it as the program that topped the BBC charts month after month last year.

COMMODORE

Now, for 1985 The Doctor Team (including a F.R. Captain, Professional Flight Simulator Programmers & Aerodynamicists) have produced this extended and enhanced Commodore 64 version.

## DIRECT MAIL ORDER

please enclose computer and format required.



Version	Commodore 64	80C 32	Electron
Commodore 64	£12.95	£8.95	£7.95
DME	£15.00	£10.00	£10.00

1 Version £....., 2nd....., 3rd....., 4th....., 5th....., 6th....., 7th....., 8th....., 9th....., 10th....., 11th....., 12th....., 13th....., 14th....., 15th....., 16th....., 17th....., 18th....., 19th....., 20th....., 21st....., 22nd....., 23rd....., 24th....., 25th....., 26th....., 27th....., 28th....., 29th....., 30th....., 31st....., 32nd....., 33rd....., 34th....., 35th....., 36th....., 37th....., 38th....., 39th....., 40th....., 41st....., 42nd....., 43rd....., 44th....., 45th....., 46th....., 47th....., 48th....., 49th....., 50th....., 51st....., 52nd....., 53rd....., 54th....., 55th....., 56th....., 57th....., 58th....., 59th....., 60th....., 61st....., 62nd....., 63rd....., 64th....., 65th....., 66th....., 67th....., 68th....., 69th....., 70th....., 71st....., 72nd....., 73rd....., 74th....., 75th....., 76th....., 77th....., 78th....., 79th....., 80th....., 81st....., 82nd....., 83rd....., 84th....., 85th....., 86th....., 87th....., 88th....., 89th....., 90th....., 91st....., 92nd....., 93rd....., 94th....., 95th....., 96th....., 97th....., 98th....., 99th....., 100th.....

NAME.....

ADDRESS.....

DOCTOR SOFT, PO BOX 66, EAST PRESTON,  
WEST SUSSEX Tel 09062 70044

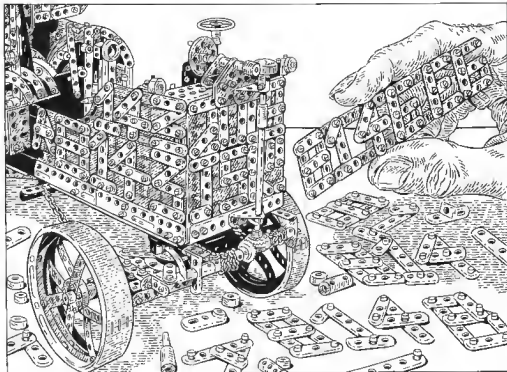
Prices include V.A.T.,  
Postage & Packing  
Free

# GOING INTO ASSEMBLY

## Four 64 assemblers reviewed

by Ken Ryder and Dermot Williams

There are several ways of entering machine code into your 64. You could painstakingly hand-assemble your list of 6502/6810 mnemonics into DATA statements using a Basic loader. But you could buy a machine-code monitor or, better still, an assembler. The last two methods are recommended to avoid sleepless nights. Ken Ryder has been getting to grips with Audiogenic's machine-code monitor and Doctor Watson's Beginner's Assembly Language, whilst Dermot Williams has grappled with Interceptor's Assembler 64 and Zeus 64 from Design Design.



### Audiogenic Monitor

Audiogenic's Monitor, at £29.95, is the most expensive package reviewed here. It is contained in a sturdy, neat, chocolate brown cartridge. It occupies 8K of address space from \$8000 to \$9FFF, so the Basic program area is

reduced to 36K when the cartridge is in place.

#### Commands

The firmware offers 17 commands — 16 enable machine code to be entered, examined and modified; the other one allows a Centronics parallel printer to

be connected to the user port via a suitable cable.

Unlike the original TIM monitor found on Pets, which tends to be the starting point for designers (and reviewers) of any Commodore assembler, the Audiogenic Monitor boasts an assemble command (A). It accepts standard 6502

mnemonics, addressing notation and hexadecimal operands. Branching is made easy by specifying the branch address instead of calculating offsets in two's complement.

Conversely there is a disassemble command (D) which displays the machine code in hex followed by the

equivalent mnemonics and operands from a specified start address. The disassembly stops after each screenful, either the hex or mnemonics can then be overwritten and be re-assembled automatically.

An area of memory can be filled with the same byte with the F command, useful for setting up screen colours and displays. The hunt command (H) can search an area of memory for a text string of sequence of bytes.

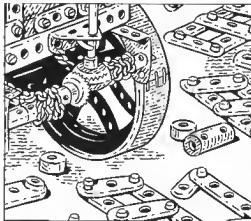
Any area of memory can be displayed as hex values shown in eight columns with the M command, the normal 64 screen editor can then be used to overwrite any particular value. In this way areas of memory can be filled with data for use by the main program. This data or indeed any other area of RAM can be transferred from one location in the 64 to another by using the T

useful for checking the flow of a program, and for tracing unexpected loops.

### Output

Machine code can be saved and loaded from tape or disk with a filename. Unfortunately there's no 'Verify' command to check that the code saved is the same as that in memory. A disassembled area of memory may also be sent to the printer if required (with the P command).

In addition to the monitor features there is also a (C) command to connect a Centronics parallel printer to the user port. Once the command has been executed, control can be returned to Basic; and listings, files etc., can be sent to the printer in upper-case CEM ASCII or upper/lower-case true ASCII.



command, so code can be opened up as a program expands.

The usual G command is included to run machine code from a specified address at full speed. Alternatively the program can be stopped through instruction with the current position of the program counter displayed. In addition a 'Walk' command can step through so that at each instruction the contents of all the registers are displayed together with the hex and disassembled instruction. At any time the contents of the registers can be overwritten and the walk process continued. These last two commands are obviously

### Conclusion

Audiogenic's offering is a fairly standard machine-code monitor with the convenience of cartridge operation and the added bonus of a Centronics printer interface provided you have a suitable cable. But the documentation is minimal, lacking detailed examples, and a beginner will need a book to refer to — Commodore's own 64 *Programmers Reference Guide* should do. This monitor is aimed at the experienced user, writing relatively short code to be included in Basic programs, or to add commands to the rather limited Basic language.

Monitor — \$29.95  
Audiogenic, PO Box 48  
Reading, Berks  
Tel: 0734 444446

## Dr Watson's Beginners Assembly Language

The Dr Watson assembler course consists of a tape and book presented in a library book type binder. The complete package will cost you £12.95. The tape contains an assembler and a tutor in the black art of hexadecimal.

The menu-driven assembler falls somewhere between the Rolls-Royce Mikro 64 and the Audiogenic Monitor, again occupying about 8K of RAM. It is not a true assembler like Mikro 64 where a source code is created and then assembled into machine code (object code). Instead it is a continuous assembler like the Audiogenic offering; it is far more flexible, though.

Labels are supported and operands may be entered in hex and decimal. By default the number of labels is limited to 21; but the assembler is written in unprotected Basic, and instructions are given to increase the limit by altering the program.

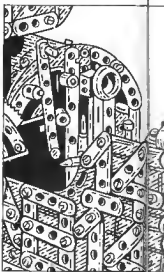
The assembler also includes the rather advanced feature of MACROs. A MACRO is a series of instructions which reoccur throughout the machine code — it is not a subroutine, though it is sometimes more efficient to repeat instructions in machine code instead of calling them as a subroutine. Although this occupies more memory it can increase the program running speed. A set of instructions is identified with a MACRO name, from then on wherever that name is used the specified set of instructions is included in the code without having to type it!

### Commands

Programs are entered with the usual set of 6502 instructions. Unfortunately the method of indicating addressing modes does deviate slightly from normal and would have to be re-

learned when using any other monitor or assembler.

The area of memory containing the machine code, or indeed any other part of memory, may be



listed to the screen or printer; only Commodore or equivalent printers are supported, however.

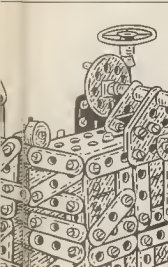
The listing is impressive — divided into three set columns. The first displays the memory address in both hex and decimal, the second shows the machine code stored in that address in hex, and the third gives the equivalent disassembled code in Dr Watson mnemonics.

Unlike the Audiogenic Monitor, the disassembled code may not be edited. The only way to alter code is to overwrite it, or enter the built-in machine-code monitor. The monitor is identical to TIM (containing the commands S, L, G, R, M, X) so the contents of memory can be displayed in hex and edited.

TIM is loaded into the 5C block of memory, and remains there even if the assembler is overwritten with another Basic program. Machine code created by the assembler may be re-located elsewhere, or existing code can be 'opened up' to insert extra commands.

## The book

The whole spectrum of machine code is covered in the well-written and informative companion



paperback of some 240 pages, each member of the 6802 instruction set is explained with the aid of several examples and exercises. The assembler and its functions are described too, together with methods of entering machine code without the assembler (POKEs and DATA statements).

This is where Dr Watson offers a useful option to convert machine code into Basic DATA statements, with user definable program line numbers. These statements can then be tagged on to the end of a Basic program, or one can be written around them. The text even describes where to locate machine code to prevent it being overwritten by Basic. All good stuff.

The 64's Kernal ROM contains many useful machine code routines which can be accessed by your own code, avoiding a lot of hard work. For example characters can be read from the keyboard and output to the screen very rapidly. Lessons describing how to incorporate these routines are also included in the text. There's a comprehensive memory map of the whole Kernal ROM in an appendix, together with a map of the Basic ROM and a general

map of the 64.

For the more adventurous programmer floating-point manipulation using machine code is covered. This is a complex subject, but the authors introduce it in a matter-of-fact way using the Kernal's floating point routines and accumulators to maximum effect.

In the same chapter the oft-forgotten or glossed-over subject of the Basic USR statement is introduced. This statement is the link between Basic and machine code, allowing floating point parameters to be passed from one to the other. This subject deserves and receives a clear explanation.

## Conclusions

Dr Watson's assembler is to the complete novice and is suitable for the development of short-to-medium-sized programs. The accompanying text book is excellent, written in a relaxed and friendly style and certainly very specific to the 64. Verdict? Excellent value for money.

Dr Watson's Beginner's Assembly Language - \$12.95  
Honeyfield Software  
Stanford House,  
Both Place, High Street,  
Barnet, Herts.  
Tel: 01-441 4132

## Interceptor: Assembler 64

Assembler 64 costs a mere £7 — and the price shows. It comes in a small plastic cassette case just like one of Interceptor's games. That means the instructions are crammed on to the tiny unley card. Whilst this is ideal for games, it's hardly suitable or adequate for a complicated utility such as an assembler. Incidentally, it is not available on disk.

The assembler allows Basic-like source files to be entered with mnemonics preceded by line-numbers and arranged in order accordingly. Apart from standard mnemonics, lines may contain labels, line-number branches and BYTas.

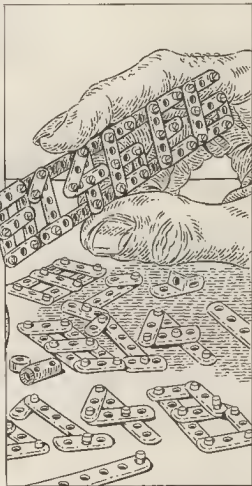
Labels may be substituted for numbers in all situations, and simple addition may also be performed. Line numbers may be used in place of absolute addresses or labels as long as the line number is

preceded by the letters 'GO'. For example, 'BNE GO100' means BNE to line 100 of the source file.

The only pseudo-operand is BYT. It is used for inserting numeric data into a program. So BYT 67,85,33 would insert these three numbers into the object code. Note that BYT, and indeed all other mnemonics, accept only decimal numbers. This will obviously slow down a practiced hex programmer.

get HEX to perform the opposite function. That probably means that when writing programs with Assembler 64, you can neither insert hex into your work, nor get the program to convert hex into decimal numbers that it has already accepted.

Source programs may be edited much like Basic programs with lines being edited, added, deleted, inserted and listed. Listings may be directed to both the screen and a (Commodore) printer. And source files



## Commands

However, Assembler 64 does provide two base-changing commands: DEC and HEX. Or does it? Whilst DEC happily converts decimal numbers into hex, I couldn't

may be loaded and saved, with both tape and disk being supported.

Once a source program is complete, the ASSEMBLE command begins the assembly process. But it's a slow three-pass job which

assembles directly into memory. And there is no option for saving the object code.

But Assembler 64 imposes a few infuriating deviations from standard 6502/6510 mnemonics: all commas in indexed addressing must be replaced by semi-colons. If you're used to commas, it's difficult to stop them slipping in. Also, and for no apparent reason, absolute numbers must be represented by the 'equals' sign; for example, LDA = 10 or CPX = 235.

### Conclusions

Altogether, Assembler 64 is not a very pleasant program to use. The combination of unorthodox mnemonics and accepting but not converting hex does little to make the machine-code programmer's lot a happy one. Still, it is very cheap, but you could do a lot better.

### Zeus 64 Assembler

The Zeus monitor is also available at a potentially bargain price — £9.99. It comes in a more impressive video-style case and includes an instruction booklet

Assembler 64 — £7  
Intercept Software  
Linden House,  
The Green, Eadley,  
Leeds,  
Hants.  
Tel: 0755 71446

### The monitor

On loading, Zeus jumps straight into the machine-code monitor, and with nineteen commands, it's pretty powerful. There are the usual monitor commands, such as D (disassemble), F (fill), G (execute code) and R (registers). Then there's the not-so-usual and very useful commands like T (tabulate) and C (copy), which accomplishes the 'transfer memory' function.

The T command itself gives a tabulated display of memory contents in hex, eight bytes at a time just like the normal monitor M command. In addition to the hex display, an ASCII display of memory can also be given. This is a real bonus when you're writing programs that involve a lot of text. Then there's the P

command which directs output to a printer, not just a Commodore printer but any Centronics printer

more sophisticated because it takes uses mnemonics, thereby saving a lot of memory when storing source

ASCII directly included, with 'C' meaning Commodore ASCII and '&C' meaning true ASCII. The 'up arrow' symbol represents high-byte, thus saving a lot of

calculating in situations where the X and Y registers must be loaded with the high and low bytes of a number

Pseudo-operands available in Zeus include DFB for defining bytes (same as BYT), DFW for defining sixteen-bit words, and DFC, for defining a string of characters. These, and others, make it very easy to include numeric and string data in program.

A number of useful commands are provided for editing source files. The F command lists occurrences of a given string in a program. And the C command will change the string to a given second string. As well as loading and saving of source files, Zeus allows a second source file to be appended to the end of one already in memory.

Actually assembling a program is very speedy and takes a matter of seconds. Any errors in the source code are listed along with an appropriate error message.

### Conclusions

I could say a lot more about Zeus 64's features which I haven't even explored to the full yet. In all, this is a very professional package which has all the little touches that make an assembler a joy to use. For just under a tenner, it is, in my opinion, a giveaway. For someone looking for either a good monitor or assembler, Zeus has got to be a sound choice.

Zeus 64 — £9.95  
Design Design  
125 Eadley Road  
Chesterfield M18,  
Manchester  
M18 7ES  
Tel: 044 295 6603

### The assembler

Now to the assembler, which introduces itself by letting you open either a new or old source file. Of course, you can only re-open an old file if you can remember where it is in memory. The default address for source files is the start of user RAM.

Like the Intercept assembler, Zeus creates source files ordered in Basic-like lines. But Zeus is

files — which also speeds up loading and saving to tape or disk. It also offers automatic line numbering which works like the AUTO command found in some extended Basics. It also has a command to renumber the source file

Zeus is very flexible in that it allows numbers to be expressed in decimal, hex or binary, as well as in mathematical equations. Labels can also be used, and





# A FREE LIGHTPEN!

Yes a FREE Light Pen! with every **GRAPHKIT**! Graphkit is the ultimate in drawing<sup>1</sup>, designing<sup>1</sup> or painting<sup>1</sup> (using the light pen of course, which incidentally has a full 3 year warranty!) Graphkit will amongst other things allow you to

- Draw free handed on the screen anything from a Micky Mouse to your latest integrated circuit!
- With all the fill colour and erase facilities of course!
- Save/load your latest master piece to/from the disk/tape drive
- Or directly copy the drawing on the screen to the printer! And keep it for ever or send to a friend as a post card!
- Design your own colourful sprites and characters
- Play the games in the package! or use the light pen in your own games/education/programs

**GRAPHKIT** is available on disk and tape. Tape version is £15.95 and disk version (recommended) is £19.95



All you 1540/1541 disk users **DMON**<sup>1</sup> is here at last. Dmon is the disk monitor you have been waiting for it will allow you to

- read/write blocks from/to the disk
- display and edit blocks on the screen
- display and send disk messages/commands
- transfer your programs from tape to disk or disk to disk or even disk to tape! • and more!

**DMON** comes on **DISK** at only £9.95

Do you use tapes? Are you sick and tired of waiting for your programs to be Loaded/Saved from/on the tape? Then you need a **TORNADO**!! Tornado allows you to Save/Load/Verify your Basic/machine code programs faster than a CBM 1541 disk drive does! Due to popular demand! Tornado now comes with new and more powerful commands plus extra instructions to assist you in making test versions of your existing machine code/Basic programs. Tornado is available on tape for CBM 64 and 8K + Vic 20

Do your Run/Stop and Restore keys often fail? Do you want to come out of those crashes? Or get into those unbreakable programs? Then what are you waiting for, get yourself a **BREAKER**!! Reset switch and let your computer know who is the boss!! Breaker can be connected to your machine in seconds, no soldering. Included with the Breaker is a copy of basic recovery software on tape. Now available for any CBM 64 or Vic 20

**A FREE BREAKER WITH  
EVERY TORNADO IF YOU  
USE THE COUPON BELOW  
NOW!**

**BSF CSL, B2 FURNACE DRIVE, CRAWLEY, W SUSSEX  
RH10 6JE.**

- Please send me Tornado at £9.95 + my free! Breaker
- Please send me Breaker at £7.95
- Please send me Rom-File at £7.95
- Please send me Graphkit at £11.95
- Please send me Graphkit at £15.95 (tape)
- Please send me Graphkit at £19.95 (disk)
- Please send me DMON at £9.95

I enclose cheque/PO/cash to the sum of £ .

Name . . . Computer . . .

Address . . .

. . .

Tot

Please use this form and block letters only. All prices are inclusive of p&p (mail order only, add £2 if outside UK). Please post to  
**BSF CSL, B2 FURNACE DRIVE, CRAWLEY, WEST  
SUSSEX RH10 6JE.**

# HATS OFF TO MEL



☐ Please send me your free catalogue.  
Please send me:

## COMMODORE 64 SOFTWARE

- |  |        |
|--|--------|
| <input type="checkbox"/> Commodore 64 Sherlock         | £14.95 |
| <input type="checkbox"/> Commodore 64 Castle of Terror | £9.95  |
| <input type="checkbox"/> Commodore 64 Hangslead        | £9.95  |
| <input type="checkbox"/> Commodore 64 Zim Sale Rim     | £9.95  |
| <input type="checkbox"/> Commodore 64 Penetrator       | £7.95  |

I enclose my cheque/money order for £

Please debit my Access Card No

Signature

Name

Address

- |  |        |
|--|--------|
| <input type="checkbox"/> Commodore 64 The Hobbit         | £14.95 |
| <input type="checkbox"/> Commodore 64 Classic Adventure  | £6.95  |
| <input type="checkbox"/> Commodore 64 Hungry Horace      | £5.95  |
| <input type="checkbox"/> Commodore 64 Horace Goes Skiing | £5.95  |
| <input type="checkbox"/> Commodore 64 FORTH              | £14.95 |
| <input type="checkbox"/> Commodore 64 A.C.O.S. +         | £8.95  |

## BOOKS

- |  |       |
|--|-------|
| <input type="checkbox"/> Commodore 64 Games Book 2                               | £6.95 |
| <input type="checkbox"/> Supercharge Your Commodore 64                           | £5.95 |
| <input type="checkbox"/> Commodore 64 Software Projects                          | £6.95 |
| <input type="checkbox"/> Commodore 64 Games Book                                 | £5.95 |
| <input type="checkbox"/> Commodore 64 Sound & Graphics                           | £5.95 |
| <input type="checkbox"/> Commodore 64 Expert                                     | £6.95 |
| <input type="checkbox"/> Commodore 64 Machine Language for the Absolute Beginner | £6.95 |

Expiry Date

Postcode

CU1

Orders for  
Melbourne House Publishers  
39 Milton Trading Estate  
Abingdon, Oxon OX14 4TD

Correspondence to:  
Cable: Your House  
Cable: Your  
Postcode: OX14 4TD

All Melbourne House software is  
authorised and guaranteed  
approved merchandise.

Trade enquiries welcome

£  
£ + p/p .80  
Total

£  
All prices include VAT where applicable  
Please add 80p for post and pack

Access orders can be  
telephoned through on our  
24 hour service (0235) 83 9901



# LBORNE HOUSE!



## **Sherlock** Be the world's greatest sleuth.

Some reviews of Sherlock Spectrum 48K

'Amazingly detailed. No Spectrum owner will want to be without Sherlock.' *MICRO ADVENTURER*

'Another Winner in The Hobbit class. It's a complex real time adventure which will keep devotees puzzled for hours.'

*DAILY EXPRESS*

'Sherlock is an adventure which has yet to be beaten.'

*YOUR SPECTRUM*

'Sherlock is a superb program and will provide many hours (hours? months more likely) of stimulating entertainment.'

*PERSONAL COMPUTER NEWS*

'Sherlock is an excellent adventure bursting with atmosphere, challenge and inventiveness.'

*PC GAMES*

'Sherlock the adventure is about as devious as Sherlock Holmes the master sleuth.'

*POPULAR COMPUTING WEEKLY*

**Castle of Terror** is a stunning graphics adventure game set in the 1990's when and where 'Dracula' stories abounded.

Find out what your mission is by talking to the right people. But don't be fooled! Features include: Multi-word 'English Language' style input; 40 superb, high detailed full-screen graphics; animated characters, special effects and sound.

**Hampstead** is an adventure game for would-be social climbers

'Very funny with a joke of some description round every corner.'

*TIME OUT*

'One of the best adventures I have played. It's a must Super.'

*HOME COMPUTING WEEKLY*

'An excellent example of a new type of game. It is a concept.'

*COMPUTER TRADE WEEKLY*

**Zim Sala Birn** A totally new adventure experience

'It will have you bleary-eyed at 3.00 am as your little mind struggles to recover the treasure from the Sultan's bedroom and bring it back to your starving village.'

*COMMODORE COMPUTING*

'There are some decent puzzles to be solved and the program generated a considerable atmosphere by the clever use of some excellent music.'

*PERSONAL COMPUTER GAMES*

**Penetrator**, the most challenging arcade game has enjoyed tremendous success and now it has arrived for the Commodore 64

Review of Spectrum 48K Penetrator.

'What really raises the game above its fellows is the revolutionary facility to completely redesign the landscape. That coupled with the practice modes at each level, makes it one of the most comprehensive arcade games.'

*SINGULAR USER*

# TEACHER INVADERS

## Can software really help teach your kids?

Why did you buy a Commodore 64 for your children? Are you worried that they use it mostly for playing games? If you've asked yourself these questions, you're probably the kind of person educational software producers would like to meet. The education market is growing rapidly, gradually convincing us that with appropriate software, your zapping-machine can become a valuable educational tool. Ken Young takes a broad look at ideas behind educational software and samples some of the most recent offerings for the Commodore 64.

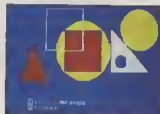
by Ken Young

Practically every micro manufacturer on the market has at some time or other made the claim that their product has untold 'educational' potential. This has led to many parents buying computers with the sole intention of using them as a kind of hi-tech replacement for that old mainstay — the Encyclopaedia Britannica.

The dream of little Johnny sprouting untold amounts of new grey matter as a result of a few nights alone with the all powerful grey box has proved to be more than wishful thinking. But this is by no means a cause for despair. It is a most healthy development. In the short term the suppliers may sell less computers for 'educational' reasons; but in the long term there will be more and more educationally valid programs on the market and less and less utterly mindless 'drill and practice' type software that should have been thrown out long ago along with thermionic valves.

The Commodore 64 is in a particularly good position to benefit from the past 2-3 years of experimentation by software houses in the education market. Many programs that have proved to be successful on the preferred schools computers — the BBC Micro and the RML 380Z — are being converted for the burgeoning home computer market where the only real chance of making a profit from educational software lies.

There's no denying that home computers are educational, they give an insight into the workings of computers at all levels, they encourage logical thought; they offer openings to an ever-widening variety of stimulating micro-worlds. But like all tools their usefulness depends on the intelligence and integrity of the user



Mr T's Shape Games — teaches shape recognition

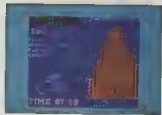
The secret to getting educational value out of your computer lies in keeping your expectations to realistic levels; don't expect the computer to replace a good teacher — that won't be possible for another 20 years or so — but do expect it to be an invaluable addition to learning techniques already available.

So what kind of programs are there on the market and who are they aimed at?

There's around about 200 programs of an educational nature for Commodore computers though most of these were developed a year or more ago and are now looking a bit trawled at the edges. The majority of



BMX Number Jump — bike fun teaches arithmetic



Car Journey — good educational software

programs are aimed at the under-12 year old age bracket mainly because programs for older kids are difficult to write and expensive to develop.

The programs to avoid are the computerised tests that make little use of graphics or sound facilities — thankfully these are disappearing fast. A more common trend, particularly for programs for early learners, are packages based around a household character such as Paddington Bear. Another technique is to make learning as much fun as possible by introducing a strong game element as is the case with 'BMX number jump' in which the player races a BMX bike over mathematical hurdles in a frantic attempt to become an ace rider.

Perhaps the most interesting development of all, and one which has all the signs of a continued healthy growth, are the simulation



Paddington Bear is the star of a series of educational games

programs that let the child experience a real situation and have to make a whole range of decisions to achieve success in the game.

Teachers claim these programs are extremely good for 'cognitive' development. The kids just say it's a whole lot of fun. But enough about the theory; let's load up some of the most recent offerings for the Commodore 64 and assess their suitability as educational software.

### LEARNING FOR TINY TOTS

Collins Software have come up with a very attractive range of packages that

neatly supplement the best selling Paddington Bear books. The programme are reasonably priced at £7.95 and consist of a short story book, separate loading instructions and computer cassette.

Each program addresses particular needs of early learners such as writing skills and perceptual ability. This is done by use of a number of programs on the one cassette that neatly dovetail to provide many hours of enjoyable learning.

**Paddington And The Disappearing Ink** is to be highly recommended. It begins with a program called **Letter** that is the best implementation of word-processing for young learners I have ever seen. The child is asked to type in his or her name and is then helped to write a letter, the computer asks for the address line by line and neatly slots it into the relevant position on the screen. Ways of beginning or ending the letter are suggested to add to the child's use of the language.

**Letter** is complemented by **Type-writer** which takes the child a little further and offers the choice of writing a thank-you letter or a 'having a nice time' holiday letter. There are plenty of prompts to encourage different approaches: such as five different suggested ways of describing the weather — now there's the mark of a British software house.

Another program, **Paddington's Problem Picture**, begins by asking the child to help our cuddly hero match up shapes on the screen (circles, squares, diamonds etc.) It includes colourful, clear graphics and musical rewards when the child successfully manoeuvres Paddington and his trolley to the correct shape.

To help reinforce the use of the words describing different shapes the next program on the tape asks the child to guess the correct word to describe a particular shape, each error builds part of a train, which after ten mistakes shunts off and chunders its way across the screen. The sound and graphics will be the envy of British Rail.

Further programs help the child to differentiate between colours and to sort shapes according to shape and/or colour.

The cream on the cake is the final program called **Mosaic** which lets the child design his or her own drawings on the screen, it's a matter of moving a 'tile' around the screen, selecting a shape, and after dipping the shape in to the colour required placing it on the working area of the screen. It's an excellent simulation of computer aided design and could easily have been sold as a program in its own right.

**Good Housekeeping Software** have adopted a similar approach with the creation of their **Mr T Software**. Mr T is less 'T'-angible as a character but his lively T-shaped body appears playing help and assistance throughout. The range is now being expanded, with each package costing £9.95. Here's two of the latest offerings.



# ZX SPECTRUM

**SIMULATOR  
FOR THE  
commodore 64<sup>+</sup>**

**ONLY £14 - 95 !**

**IF YOU HAVE A COMMODORE-64  
MICROCOMPUTER, THIS BRILLIANT  
PROGRAM WILL ALLOW YOU TO USE  
VIRTUALLY ANY SPECTRUM BASIC  
PROGRAMS WITHOUT  
MODIFICATION !**

Just think of it ! your programs will think you really have a Spectrum ! Because your 64 has a proper keyboard plus RS232, disk-handling, and serial port facilities, we are throwing in a lot of features of ZX interface-1\* as well.

**WHY YOU SHOULD GET A SPECTRUM SIMULATOR**

- 1 You can type in (virtually) all those Spectrum listings from magazines, as well as those for the 64
- 2 It's an incredibly cheap way to get all the facilities of another computer.
- 3 And if you're upgrading from Spectrum to 64 your old programs don't all become obsolete
- 4 Spectrum Basic is in many ways easier and more powerful than Commodore Basic. Why not compare them for yourself ?

**FULL TECHNICAL DETAILS AVAILABLE FREE**

\* Trademarks of Sinclair Research Ltd  
+ Trademarks of Commodore Business Machines Ltd

**ZX-SPECTRUM SIMULATOR**

**FOR SPEEDY MAIL ORDER SERVICE, SEND  
CHEQUE/P.O. FOR £14 95 (Access/Visa accepted)**

**WHITBY COMPUTERS LTD**

**7. CHUBB HILL ROAD, WHITBY, N.YORKS.  
YO21 1JU Tel 0947-604966**

**Mr T Tells The Time** consists of four different activities which encourage familiarity with clocks. The first, *Matching Hours*, shows a clock presented gradually on the screen. Hourly times are automatically indicated along with melodious bell chimes. Subsequently the child is asked to match the positions of the hour hands on another numberless clock. On successful completion Mr T shows his approval by showing off his breadkneading skills — definitely better than a tick in the mergin from teacher.

Then there's *Clock Numbers* which helps the child learn to place numbers around a clock face. And *O'Clock* brings the activities together by asking the child to move the hands of the clock to the correct positions for different times.

Mr T's *Shape Games* is all about recognition of different shapes — the child has to estimate if a falling shape is going to fit into a larger pattern on the screen and press the space bar when it is in the right position. It requires great attention and good timing. *Shape Maker* is a little more relaxing, allowing the child to select shapes and colours and to create pictures on the screen.

All the Mr T programs are very 'user friendly' and are easy to modify for children of different abilities. They come complete with a helpful *Parents Handbook* with full details about each program and lots of hints and tips for setting up related activities. These programs are to be recommended but you must be prepared to be very involved in the process of using them with your kids.

*Clever Cloggs* (Argus Press, £6.50) is a series of six different early learning games. One of them is titled 'Party Time for age 3+'. It has its moments. It begins with an invitation to the child to be the 'Clever Cloggs' at a party. The six games involve activities such as keyboard familiarity, matching shapes, counting and sorting. The games are somewhat primitive and of limited educational appeal. To make life difficult there's no easy way back to the menu once you've started.

This program would get the big 'no-no' from most teachers and has little of merit except for its low price.

Following the theme of the cuddly cousin comes *Get Ready To Read With BJ Bear* (Commodore £11.99). It's an extensive, ambitious package designed by specialists in the field of early learning, aiming to introduce 3-5 year-olds to the initial stages of reading.

There is a total of four programs each containing ten different 'activities'. A colourful BJ Bear Book with stories and games backs up the on-screen action as well as a Parent's and Teacher's manual consisting of full instructions and progress record sheets.

Unfortunately the program relies



# ART'S PEGAMES

Shape Maker



# Equation



quite heavily on the use of the 'Magic Voice' add-on unit which increases the cost by another £49.99. Commodore claim that the Magic Voice will be available in time for Christmas and that a range of other programs which make use of its speech capabilities will follow. Those activities that do not utilise the add-on are very useful and centre around recognition of words, sounds and individual letters.

There is very little on-screen help (whatever happened to BJ Bear?) but the package is very carefully put together and is educationally sound. Parents and teachers will appreciate the fact that the computer automatically records the child's progress and an overall summary can be viewed at a moment's notice.

## LEARNING GAMES FOR 7-12 YEARS

In these days of the BMX bike boom and hi-tech mania, it's only natural that the games used to teach basic skills reflect the more exciting youthful pursuits — real or imaginary.

**BMX Number Jump** (Longman £7.95) is a lot safer than the real thing with the added bonus that basic number skills are learnt before saddle soreness even gets a mention.

The object is to move the BMX rider around a set of maze-jumping hurdles as he goes. Only those hurdles which contain the solution to a maths problem can be attempted. It's certainly no stroll in the park, and life is not made easier by a less than friendly kangaroo whose sole aim is to box you soundly off your bike.

There's flexibility in that different types of mathematical work can be selected at the beginning of the game: addition; subtraction; multiplication, etc. However, the game itself is painfully slow and there's no automatic way out of a game if you fancy a change or want to hand over to someone else.

**3D Hypermaths** (Longman £7.95) is aimed at the child with definite Luke Skywalker inclinations. The child is placed at the controls of a rocket plummeting through the hypersphere. His aim is to keep on track by avoiding obstacles. Of course the child must solve maths problems at the same time by adjusting the flight speed accordingly.

This game is easy to learn and well designed and should prove supportive to maths work at school. My only worry is that such programs are very much aimed at capturing the imagination of the boys and has limited appeal for most girls.

**Word Wobbler** (Longman £7.95) is a spelling game requiring considerable dexterity in avoiding word-wobbling aliens whilst collecting the letters needed to make up different words. The game has a word bank of 1500 words which are divided up into five difficulty levels. It is possible to

# The Complete Machine Code Tutor

SPECIALISED COURSE FOR THE COMMODORE 64



Trust New Generation to strip the mystery away from Machine Code. Now the Complete Machine Code Tutor makes learning machine code simple so there's never been a better time to discover the real, great benefits of machine code programming — see what the pros say.

**“A colourful, clear, interactive computer teaching package — the best I've come across in any field yet.”**  
**Popular Computing Weekly**

**“The pair of tapes forms a worthy addition to the range, giving a thorough exposition from the most elementary level of machine code programming on the BBC Micro.”**

**“Which Micro & Software Review”**  
**“The best machine code tutor and no serious Spazman programmer should learn machine code without it.”**

**“Crash”**  
**“By far the best answer comes from New Generation software who have recently issued its Complete Machine Code Tutor for the BBC and the Spectrum.”**

**“Popular Computing Weekly”**  
**“New Generation have got a very nice product here. It's well thought out, easy to use, aesthetically pleasing, and (at last) I could tell bug-free and crash-proof.”**  
**“Overall then an excellent deal, well advised.”**

**Computing Today**

Supplied with full notes, the package teaches machine code the way it should be taught — at your own pace and usually from the microcomputer, not from a book. You learn programming the professional way, plus a few tricks of the trade. Available from all good computer stores at £14.95.



NEW GENERATION SOFTWARE  
PO BOX 100, WYNDHAM, WYNDHAM, WYNDHAM, WYNDHAM  
NEW GENERATION SOFTWARE  
PO BOX 100, WYNDHAM, WYNDHAM, WYNDHAM



modify the lists by inserting your own words.

The sound effects are suitably menacing and the game easy yet fast-moving enough to be very addictive. Word wobbler will be a favourite at home and school.

**Punctuation Pete** (Hill MacGibbon £9.95) is surely the most endearing program around. It features Pete the Punctuator whose animated form runs around the screen helping the child with sentence construction. He boots lazy letters into capitals; slips commas into place, and gandy drops full stops in at the end of sentences.

To begin with, the child must try to correct a short piece of text. Once complete, Pete walks around the text (the animation is superb) pointing out where mistakes occur. After giving three chances to correct again, Pete then runs around the screen to do the final corrections — no effort spared for the sake of correctness.

The level of difficulty can be selected — it runs from junior scribe to super scribe — and a number of different passages can be selected. Unfortunately new ones cannot be created.

Another program called **Wordfinder** is also included. It allows children to investigate connections between words and to search for similars. Words are presented and a mini database of related words can be scanned. This Thesaurus of words can also be dipped into whilst playing the anagram and hangman games included. It's an excellent way of illustrating how a database might be used. To complement the program the suppliers include an immaculately produced booklet with background information on the history of the written word and printing, ideas on writing a story, and games to play.

**Fun To Learn** (Sherds, £5.95) is a pot-pourri of learning games counting against the clock, a hangman type wordgame; an adding game, guess the word against the alien, codebreaking

On paper it sounds impressive but the games are rather dull and unimaginative and are unlikely to stimulate a child's mind for very long.

**Facemaker** (Commodore £5.95) is a particularly imaginative program encouraging an open-ended approach to learning from parent and child.

The child is able to use the computer to build up a face based on descriptions that he feeds in. Bit by bit the face is created like a police identikit according to the descriptions given.

The creators have put plenty of effort into making the program as powerful as possible, you can even specify the type of hat to be worn, the length of hair, and whether or not an earring is worn. Such a program can happily be used by a child alone or a whole family group. It will take a long time before this interest in Facemaker wears off.

## SIMULATION SOFTWARE (8 YEARS UPWARDS)

There's no doubt that simulation software gets the biggest 'thumbs-up' from teachers (some even say they get the children too motivated) and go down equally well at home.

Typically a simulation program lets the child take part in a simulation of real-world events making all the necessary decisions and taking the consequences of those decisions as well.

**Special Agent** (Hill MacGibbon, £9.95) involves the child in a rapid-fire chase around Europe in search of a killer spy who is gradually annihilating British Agents.

The secret to the game lies in consulting on-screen timetables of flights and rail departures and moving rapidly from city to city decoding secret messages that hopefully lead to the capture of the enemy.

All the excitement of foreign travel and the unravelling of a constant stream of messages leaves the child totally unaware that he or she is ac-

tually learning some very useful skills: dealing with timetables, European geography, translation.

The booklet included is an excellent addition with stories about spies, maps of Europe, and other games to play. It's well designed and attractively colourful.

**Balloonair** (Hill MacGibbon, £9.95) is for the more aeronautical at heart. It simulates the flight of a balloon over various terrain and teaches a simple understanding of air flight. Unlike many programs it does not expect you to develop the skills required overnight. Instead, you are given the option to practice or go on a test flight before attempting a full mission.

The screen consists of a small balloon and the outline of land, which as you take flight, scrolls from left to right across the screen. The flight of the balloon feels very realistic and needs plenty of effort to control properly — too much thrust and you're forced into the heavens, too little and you crash to the ground below only to be welcomed by a rather touching RIP sign.

Your son or daughter won't become British Airways pilot overnight, but it's a whole lot of fun and bound to please. Incidentally, a teacher recently told me that her class had so many ideas from using this program that she had to abandon all other work for two weeks.

**Car Journey** (Hill MacGibbon, £9.95) puts the child in the position of being the owner of a delivery service, delivering parcels and packages throughout the country. In true simulation style the child constantly has to make important decisions: what kind of car or van to buy, what contracts to take, what routes to take, what speed to travel and so on.

There are a range of screens that can be viewed at any time (this 'windowing' effect is at the forefront of much business software) showing current road position, state of the bank balance, distance and fuel progress charts. Once again the enclosed booklet is well produced and contains a range of background information and further ideas.

The only failing of **Car Journey** is that it's too addictive. You and your child will be hooked from the word go and you're unlikely to get anything else done for a good few hours. You'll be learning a great deal in the process too. And that's probably the essence of good educational software for youngsters.

● Next month, we'll be looking at educational packages for the older youngster — the range of 'O-Level' revision courses from Longman software.



# FIRST AID



## for your 64

Computers, like people, are fallible. They need the right combination of code and care to perform effectively in the business or the home. And that requires first hand knowledge from you to create a healthy operating environment for your Commodore 64.

Knowledge about machine language, about the lesser known qualities of the 64, about the disc drives, graphics, and about the tricks and tips to keep your 64 on line. That's why First Publishing has now launched in the UK a series of high quality books and software packages to provide a complete health care kit for your 64. Commodore 64 users throughout Europe have already found it a tonic. We think you will, too.

For a brochure on all the Commodore 64 books and software packages available from First Publishing, please fill in the coupon and send to: Amanda York, First Publishing, Unit 21B Horseshoe Road, Horseshoe Park, Pangbourne, Berkshire

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Or ring Amanda York at (01357) 5244 or Calco Software at 01-546 7256

CUT

**1st**  
FIRST PUBLISHING LTD

# THE 64 SOFTWARE CENTRE

## 1 Princeton Street, London WC1

### 01-430 0954

#### Business accounts

Sales Ledger (Anagram) d	75.00
Purchase Ledger (Anagram) d	75.00
Cashbook (Anagram) d	75.00
Sales Ledger (Ramtop) t	14.50
Purchase Ledger (Ramtop) t	14.50
Accounts Package (Ramtop) d,t	95.00
Cashbook (Microsimplex) d	172.50
Cashbook (Gemini) d	64.95
Cashbook (Gemini) t	59.95
Final Accounts (Gemini) d	64.95
Final Accounts (Gemini) t	59.95
Inventory 64 (MMS) d	29.95
Stock Control (Gemini) d	24.95
Stock Control (Gemini) t	19.95
Payroll 64 (Studio) d	34.95

#### Home applications

Budgeteer (Adamssoft) t	8.95
Checkbook Manager (Adamssoft) d	14.95
Home Accounts (Gemini) d	24.95
Home Accounts (Gemini) t	19.95
Home Office (Audiogenic) t	14.95
Home Accounts (Fieldmaster) d	29.95
Magic Desk (Commodore) c	57.50

#### Database systems

Magpie 64 (Audiogenic) d	75.00
Mailpro 64 (Profile) d	79.95
Oracle 64 (B.I.) d	125.00
Practifile 64 (MMS) d	44.50
Simply File 64 (Simple) d	69.00
Superbase 64 (Precision) d	89.95
Figaro 64 (Saxon) d	66.25
Database (Gemini) d	24.95
Database (Gemini) c	19.95

#### Spreadsheets

Basicalc (Supersoft) d,t	17.95
Basicalc III (Supersoft) d	81.65
Calcreult Adv. (Hendic) d	99.00
Easy Calcreult (Hendic) d	43.95
Multipan 64 (Hesware) d	99.95
Practicalc 64 (MMS) d	44.50
Practicalc 64 (MMS) t	39.95

d=disk t=tape c=cartridge

**ALL IN STOCK NOW - Callers welcome**  
**(10am - 6pm incl Saturdays)**

Mail Order: Cheque or PO - add £3 for items over £30, others free.  
Credit cards (Amex, Visa): phone or write. Immediate despatch.

**The 64 Software Centre,**  
**1 Princeton Street, London WC1**

Please supply the following items

1	Qty	£
2	Qty	£
3	Qty	£
4	Qty	£
TOTAL		£

POSTAGE £

TOTAL £

Name Address

Visa/Access Card No

Date Signature

#### Programmers' Aids & Utilities

Jetpack Compiler (DTL) d	39.95
Jetpack Compiler (DTL) c	14.50
Koalapak Tablet c	89.95
Cadpack 64 (Adamssoft) d	35.00
BC Basic (Kuma) c	57.50
Chartpak 64 (Adamssoft) d	24.95
Chipmon (Mr Chip) t	12.50
Forth 64 (Audiogenic) c	29.95
Forth 64 Advanced (Hesware) c	54.95
Graphics Designer (Adamssoft) d	19.95
Graphix 64 (Supersoft) t	11.50
Logo (CBM) d	57.50
Master 64 (Supersoft) d	71.30
Mikro Assembler (Supersoft) c	59.80
Pilot (CBM) d	75.00
Printlink 64 (Supersoft) t	32.20
Quickchart 64 (Adamssoft) t	6.95
Screen Graphics (Adamssoft) d	14.95
Simons Basic (CBM) c	47.50
Sprite Aid (Adamssoft) t	6.95
Stat 64 (Hendic) c	29.95
Supersoft Utility (Adamssoft) d	12.50
Synthy 64 (Adamssoft) d	14.95
Turtle Graphics II (Hesware) c	54.95
Ultrabasic 64 (Adamssoft) d	24.95
Ulyssyth (Quicksilver) t	14.95
Victrac 64 (Supersoft) c	56.35
64 Doctor (MMS) d	19.95
Music Master (Supersoft) d	19.95
Master Composer (Access) d	44.95

#### Word Processors

Heswriter (Hesware) c	39.95
Paperclip 64 (B.I.) d	96.90
Simply Write 64 (Simple) d	46.00
Simply Write 64 (Simple) t	40.25
Vizawrite 64 (Viza) d	79.95
Vizawrite 64 (Viza) c	89.95
Vizaspell 64 (Viza) d	59.95

#### Educational & Languages

Essential Italian (Dell) d	16.95
Essential Italian (Dell) t	14.95
Renegade (Sulis) t	9.95
Wordpower (Sulis) t	9.95
Time Traveller (Sulis) t	9.95
Just a Mot (Sulis) t	9.95

various subjects. Callisto, Collins, Commodore t

#### War simulations

Eagles (SSI) d	34.95
Tigers in the Snow (SS) d	34.95
Geopolitique (SS) d	39.95

#### Flight simulators

Flight Path 737 (Anrog) t	7.95
Interdictor Pilot (Supersoft) d	19.95
Interdictor Pilot (Supersoft) c	17.95
Flight Simulator (IFR) d,t	24.50
Flight Simulator II (Sublogic) d	47.50
Solo Flight (US Gold) d,t	14.95
Heathrow (HC) t	7.95

#### Business Simulations

Commodities (Blue Chip) d	50.00
Baron (Blue Chip) d	50.00

#### Games

A large assortment on disk, cassette and cartridge

COMMODORE 64

# OXFORD PASCAL

## YOUR FUTURE WITH COMPUTERS DEPENDS ON PASCAL

### BECAUSE

- PASCAL is the world's most popular programming language after BASIC
- PASCAL is FAST - up to 20 times the speed of BASIC

### WHAT IS OXFORD PASCAL?

OXFORD PASCAL is the COMMODORE 64 version of the world's most popular programming language.

### GRAPHICS & SOUND

### WHAT DO I GET?

With Oxford Pascal you get:

- A complete Pascal compiler
- A complete Pascal editor
- A complete Pascal linker
- A complete Pascal loader
- A complete Pascal debugger
- A complete Pascal assembler
- A complete Pascal disassembler
- A complete Pascal linker/loader
- A complete Pascal debugger/loader
- A complete Pascal assembler/loader
- A complete Pascal disassembler/loader

### DO I NEED OTHER SOFTWARE?

No! Oxford Pascal is a complete system.

For more information, contact Oxford University Press, 100 Brook Hill Drive, West Nyack, NY 10994.

© 1987 Oxford University Press. All rights reserved.

# REAL ARCADE ACTION! FROM JETSOFT

FAST LOAD  
2 minutes

All 3  
games for  
Commodore  
64

## BMX STUNTS

BMX STUNTS Based on the original arcade game this action packed game challenges you. Skill over business! Straight race, wheelie ramp jump, stunts, bunny hops and the ultimate test over a V.W. beetle in the Beetle race.

FAST LOAD  
1 minute

## Cavelon II



## Cavelon I



Can you destroy the wicked wizard of castle Cavelon? Only after negotiating the six levels in this castle. Collect all the door pieces before you can attain the next level. Help is at hand in this all thrills, all action real arcade game, when trouble appears, achieve indestructibility.

## Quari



## Quari

27 levels of increasingly difficult real arcade action. Based on the game Rongis, you must avoid the crashing dinosaur, pirated style falling rocks, hellfire spears and bouncing Bongis. Negotiate rope bridges and erupting volcanoes, picking up the treasures of a lost civilization as you go - and finally escape the dinosaur - if you can!

FAST LOAD  
1 minute

the arcade people **JetSoft**

061 775 0333

?

CHANCE

TNE ANGEL  
ISLINGTON  
£100

TNE ANGEL  
ISLINGTON  
£100

KINGS CROSS  
STATION  
£100



KINGS CROSS  
STATION  
£100

PAY £200

INCOME  
TAX

WHITECHAPEL  
ROAD  
£60

WHITECHAPEL  
ROAD  
£60

COMMUNITY  
CHEST

2

OLD KENT  
ROAD  
£60

OLD KENT  
ROAD  
£60



COLLECT  
£200 SALARY  
AS YOU PASS

When you've got bored with your tea chest full of shoot 'em ups or your latest mega-screen adventure, you might cast a longing eye over those old favourite board games like Monopoly, Scrabble, Othello, draughts and Chess. Remember them? If you're a board game nut, you'll be pleased to hear that all these hardy perennials can now be played with the Commodore 64. Jennifer Goldsmith has looked at what's available, some commercially, some for free.

## Scrabble

Scrabble is such a popular word game, it needs no introduction. Now a computer version for the Commodore 64 from Leisure Genius is available at £12.95. Whether you buy the tape or disk version, Computer Scrabble comes attractively presented in a pleasantly illustrated box with a 16 page manual.

## Getting started

When loaded, Computer Scrabble displays a miniature yet otherwise identical version of the original board. Computer Scrabble then asks a few questions like the names of the players and whether you want the computer to play. Then you are ready to go.

Like the original, a maximum of four players can take part whether all humans, all computer or a mixture of both. All the rules of the game are incorporated in Computer Scrabble and they are explained in the manual.

When it is your turn you can select one of the nine options displayed on the screen. These are quit, pass, premium, values, tiles, change, juggle, hint and swap. Quit allows you to leave the current game and asks you if you would like to play again.

Pass allows you to miss your turn which you would do only if you could not make a word and there were no tiles left to do a swap. Premium tells you the value of the different coloured squares on the board whereas Values shows you the numerical value of the different letters of the alphabet.

Tiles indicates how many Ds (for example) there are left, the total number of tiles remaining is indicated under the player's scores. Change lets you change certain tiles in your rack but juggle alters the order of the tiles in your rack. Hint helps you if you cannot think of a word and Swap lets you swap racks with your opponent.

So in fact you have more features available to you than if you are playing the original game. One point, though, if you don't want your opponents to see the letters you're working with, they'll have to turn a blind eye whilst you inspect your set.

## Conclusion

Computer Scrabble can produce hours of fun whether for one person playing against the computer or a family evening's entertainment. And at least the dog cannot walk across the board and upset the tiles! One reservation, though: the tape version of Scrabble takes about fifteen minutes to load. You could have almost played a game in that time.

## Colossus

Colossus from CDS Microsystems is one of a number of chess programs for the Commodore 64 but claims to be the best, aiming to meet the demands of keen chess players whether they're beginners or geniuses playing blindfold. The program comes on tape (£9.95) and disk (£12.95) both of which are attractively presented in a

video-style case with a sixteen-page pocket-sized manual.

## Getting started

Loading Colossus takes about two minutes from disk and about four times as long from tape. By that time, you could be well into a conventional game. Still the board is cleverly displayed with excellent graphics for the pieces conventional algebraic notation is displayed around the board. The move which Colossus is considering is indicated to the right of the board. You can change the colour of the white squares and the board to suit your preferences.

By pressing the space bar a second screen appears showing the elapsed times for white and black, the seven last moves the number of pawns (half-moves) ahead Colossus is thinking, number of positions examined, the best line of play found so far and the score. The latter is divided into material and position.

The score which relates to material is fairly simple to comprehend. For example a pawn down is represented by

1. However, the score which relates to position is not calculated in decimal or 'pawns' and a large plus figure should mean that you have a large positional advantage and so on. But I don't think this is always the case when you mate your opponent the score gives you a large material advantage (62) and a minus figure for position.

## Playing the game

To enter moves you can either

MAYFAIR  
£400

SUPER  
TAX

PAY £100

MAYFAIR  
£400

PARK LANE  
£350

PARK LANE  
£350

CHANCE



LIVERPOOL  
STATION  
£100

# dice!

board games for your  
64 ----- by Jennifer Goldsmith

use the cursor or the algebraic notation providing you remember to SHIFT the letters. Both methods are clearly explained in the manual. If the move involves promoting a piece, Colossus will ask 'Promotion piece?'. Colossus is familiar with the 3-fold rule, 50-move rule and Stalemate as well as with Checkmate.

The level of difficulty at which Colossus will play is determined by the time allowed per move or per game. The First mode lets you play 'Tournament style'. That means X moves have to be played in time Y followed by a secondary parameter of A moves in time B. The Average Mode asks the time per move. This can be anything from one second a move to 59 min 59 seconds a move. So it's useful in lightning chess (ten seconds a move) and for analysis.

Mode three needs the time for the total game useful for playing five-minute chess. Mode four makes Colossus play at the same rate as you. Then there is the infinite mode which means Colossus will continue to look until you interrupt it, it finds a mate, or it has searched ahead.

Lastly there is the problem mode which has two sub-divisions. One sub-division will find normal mates in up to seven moves whereas sub-division two will find self-mates which is a major advance as many good chess computers do not provide this facility! There is no facility for help-mates (ie you help your opponent to mate you). This may sound strange but help-mates do occur in problems as do self-mates.

## Special features

The 'Alter position' command will let you set up a particular position easily and if you make a mistake the original position can be recovered by pressing the Q key.

During the course of a game you can step backwards and forwards so you can check mistakes and even replay the game. Colossus can also play against itself and you can replay the whole of any game at the speed you want. You can even set the elapsed times for each side and if you want to play a friend then Colossus will supervise to make sure you don't cheat. This is also useful if you want to run through the moves to

get to a certain position. Finally, you can play 'blindfold' chess by making the board go invisible.

Naturally, you can save the game to tape or disk, not just from the stage you have reached but all the moves from the start to the current move (max 120). But there is a problem here: only one game per disk can be stored as Colossus always allocates the same name for the file. If this could be amended so the user allocates the file name this facility would be perfect. The minor snag is that when you save the position you do not save the line of best play, which would be useful especially when you have had the machine running for hours. It would also be nice if one could get a hardcopy of the moves of the game.

## Conclusion

Colossus is a well designed program including many features plus comprehensive opening theory not seen on other home micros and it must be the best chess program available for the Commodore 64 and at \$3.95 on tape and \$12.95 on disk, every keen chess player should have a copy. It is simple to use yet more fun than a board as you can learn so much more and, of course, you can play games whenever you want.



FLEET STREET  
£1,220

TRAFALGAR  
SQUARE  
£2,240

FENCHURCH ST  
STATION  
£1,200

LEICESTER  
SQUARE  
£1,260

COVENTRY  
STREET  
£1,260

WATER  
WORKS  
£1,260

PICCADILLY  
£1,280

GO TO  
JAIL

BOND STREET  
£1,320

COMMUNITY  
CHEST

OXFORD  
STREET  
£1,300

REGENT  
STREET  
£1,300

## Draughts

This hardy perennial game has been written for the Commodore 64 and is available on tape from Superior Software for £7.85

On loading the program, a 'which rules section is displayed. After selecting your rules such as 'must take all, the screen displays various options. When you have finished with the options the board is displayed, annotated like a chess board. Elapsed time for each side and how the computer is thinking is displayed as well, on the right of the screen

## Playing the game

Like chess, you can set the level of play and the games can be saved, loaded and replayed. The colours of the various parts of the screen can be altered and the moves can be input either with the cursor or through algebraic notation. Sound is used at appropriate times, for example when the computer moves pieces or when you make an illegal move

## Conclusion

**Draughts** is a well-written program that provides more facilities than the original board game. But, like all computerised versions, you don't get that feel of satisfaction when you've jumped over a whole row of your opponent's pieces

## Kensington

Kensington is available for the Commodore 64 both on disk and tape from Leisure Genius at £12.95. Whichever you buy, the game comes attractively presented in a box with a 16 page manual. The object of the game is simply to try and occupy all six points of a white hexagon with your own colour stones

On loading Kensington displays a pattern of adjoining triangles, squares and hexagons. Colour is used but you cannot change them because they form part of the program like Scrabble

## In play

Only two players can participate whether both human, both computer or one of each. You are required to place your stones on the board, which you do using the cursor controls illustrated in the manual. The first player to form a hexagon wins. During play if you form a triangle you can move one of your opponent's stones and if you form a square you can move two of your opponent's stones

## Conclusion

It is quite an entertaining enjoyable game at the beginning but now I can beat the computer on top level and I have not played more than half-a-dozen times! However against an opponent the game can last from 5 minutes to anything up to 5 hours.

**\*Also available from Leisure Genius are two more old classics: Mastermind and Chess**

## PUBLIC DOMAIN SOFTWARE

### Othello

Othello, like Chess, is a game involving strategy, simple enough to take a minute to learn yet years to master. You have to capture your opponent's pieces by trapping them between yours. Othello comes on disk and most probably also on tape. And you can get it from the library of user groups - providing you are a member. Two versions are available, human versus computer and human versus human

## Load and run

The board is like a chess board but with the numbers 1 to 8 arranged horizontally instead of vertically and the letters A to H vertical instead of horizontal. Moves are made silently, in fact sound is not used at all, even if you make an illegal move! Screen colours cannot be changed either.

The computer selects who shall move first. When it's your turn to play you show the computer where you want to place your piece by entering the cell reference, for example, d3, e6 if when it is your turn to move and you are unable to capture at least one of your opponent's pieces then you press 0. If you try and make an illegal move the computer lets you know.

When there are no more cells to fill or neither player can make a capture, the game ends and the computer states the winner and the score for each player. No running scores is shown.

## Monopoly

Monopoly has been adapted for the Pet and Commodore 64 under the name Monopole. Like Othello it is public domain software but the English version is only available to members of the user group ICPUG. Monopole is available on both tape and disk. A manual is not needed as the game is self-explanatory for those unfamiliar with the original board game

## Do not pass go

On loading Monopole and after a brief introduction the board is displayed. It is identical to the original board in colour and design, the sole difference is that the property names are not visible. You might think that's a problem. Not really, because when you land on a property the property name is immediately displayed on the screen and dazed details and other information are available on separate screens.

To roll the die, you simply press R. If you want any information or you wish to carry out a transaction, such as mortgage properties you press T and various options will be displayed. You then select the option you require and the screen will then display the required information. You can then select another option or return to the game.

If the property belongs to another player Monopole automatically transfers the rent due and alters the balances so there is no squabbling.

## Property development

Sound effects like the sirens when you go to jail are a big advantage over the board game. However, only two players can play which means that it is no longer a family game. Also when building on properties you have to distribute the houses as evenly as possible rather than deciding to have four houses on one property and one on each of the other two, for example.

## Conclusion

The original adaption of this game was done for the Pet but the version for the 64 has the advantage of colour and sound. It is still an exciting game which will keep you amused

for hours and as it is available free of charge what more can be said for it? The programmers have done a very good job.

## Mastermind

There are two versions of this game, one using colours and one using numbers. I will deal with the version using colours first. This has been written for the 64 under the name Master Guess and like Monopole, is public domain software. As the instructions are simple and are displayed on the screen there is no need for a manual.

The object of the game is to work out the secret code which the computer has generated. A white peg indicates that you have guessed the right colour but the wrong location and a black peg indicates that you have both the right colour and the correct location.

The colours are represented by letters, for example R for red, Y for yellow, which secure a parity as colour graphics could have been used. You have a maximum of ten attempts at guessing the code and of course you cannot cheat by peeping like you can with the original board game. When you have made ten attempts or have beaten the code the master code appears.

## Conclusion

This is a good imitation of the original but it is a pity that the colour, graphic and sound facilities of the Commodore 64 have not been exploited to the full. But for free, who can complain? The version using numbers has been written by Commodore Educational Software and is similar to the 'colour' version but this version has even less colour than the former and again, there is no sound.



THIS WEEK LAST WEEK		WEEKS IN CHART	TITLE	Publisher	Computer	(Available on)							
SPECTRUM	VIC 40					COMMODORE 64	ELECTRON	ATARI	DIAGON	OMC	BBG	OTHER	
1	1		Ghostbusters	Activision	CBM64		*						
2	2		Daley Thompson's Decathlon	Ocean	CBM64	*	*						
3	2		Beach-head	Access/US Gold	CBM64	*	*						
4	3		Chiller	Mastertonic	CBM64		*	*					
5	1		Select Due	Computer Records	CBM64	*	*						
6	1		Suicide Express	Greenlin Graphics	CBM64		*	*					
7	6		Wanted Monty Mole	Greenlin Graphics	CBM64	*	*						
8	8		International Soccer	Commodore	CBM64		*	*					
9	5		Zaxxon	US Gold/Access	CBM64		*	*					
10	1		Bruce Lee	US Gold/Access	CBM64		*	*					
11	1		Solo Flight	US Gold/Access	CBM64	*	*	*					
12	10		Summer Games	Quick'nova	CBM64		*	*					
13	1		Eureka	Domark	CBM64	*	*						
14	6		BMX Racers	Mastertonic	CBM64	*	*						
15	1		Blue Max	US Gold/Access	CBM64		*	*					
16	2		Jet Set Willy	Software Projects	CBM64	*	*						
17	1		Monic Granny	Mastertonic	CBM64		*	*					
18	1		Larry Jane	Vortex	CBM64	*	*						
19	1		Tornado Low Level	Terman	CBM64		*	*					
20	1		Danger Mouse is Double Trouble	Creative Sparks	CBM64	*	*	*					
21	1		Backback	Ocean	CBM64	*	*	*					
22	26		Manic Miner	Bug Byte/Soft Prop.	CBM64	*	*	*					
23	1		Cascade	Cascade	CBM64		*	*					
24	1		Zaxxon	Mastertonic	CBM64		*	*					
25	1		Zeta 7	Mogul	CBM64		*	*					
26	1		Scrabble	Lecture Games	CBM64		*	*					
27	27		Vegas Jackpot	Mastertonic	CBM64	*	*						
28	13		Football Manager	Addictive Games	CBM64	*	*						
29	1		Loco	Alligata	CBM64		*	*					
30	19		Flight Path 737	Aniroq	CBM64		*	*					

## Top 20 Games for the 64

	TITLE	Publisher	Computer
3	Ghostbusters	Acornsoft	OS/2
4	Daley Thompson's Decathlon	Ocean	OS/2
5	Beach-Head	Access/US Gold	OS/2
6	Chiller	Mastertronic	OS/2
7	Select One	Computer Records	OS/2
8	Suicide Express	Grimm's Graphics	OS/2
9	Wanted Monty Mole	Grimm's Graphics	OS/2
10	International Soccer	Commodore	OS/2
11	Zaxxon	Access/US Gold	OS/2
12	Bruce Lee	Access/US Gold	OS/2

	TITLE	Publisher	Computer
11	Solo Flight	Access/US Gold	C64
12	Samurai GAMES	Quicksilver	C64
13	Eureka	Domark	C64
14	BMX Racers	Mastertronic	C64
15	Rise Max	Access/US Gold	C64
16	Jet Set Willy	Software Projects	C64
17	Beetle Grabby	Mastertronic	C64
18	Two-oh Low Level	Vortex	C64
19	Larry Jans	Termion	C64
20	Danger Mouse in D'hle Trble	Creative Sparks	C64







# SCREEN SCENE



## Rocket Roger Alligata Price £7.95

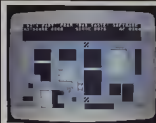
Presentation: **★★★★**  
Skill level: **★★**  
Interest: **★★**  
Value for money: **★★★★**

There's some real hover-bover here: a joystick can't be used simply because there are too many operations to perform concurrently. Try to combine the accuracy of upward thrust with lateral movement whilst pumping out laser bursts. Thirty-four way scrolling screens to immerse yourself in though you must be prepared to accept a squashed playing area.

Perfecting keyboard control will keep you quiet for some time, then there are the mysteries of the planet itself. Really

a practice mode, just to come to grips with jet-pack flight (and free fall) is called for. Meteors are no respecters of your sensitivities and quickly eat up lives. To collect the 25 crystals demanded will require all your skill, guile and experience.

Above ground all the enemies are rapably, down in the huddle-hoppers finishing school, patrolling and rods are invulnerable, what's more in some zones a multitude of martial meemes insist in warping in to plague you almost



## Di's Baby Bad Taste Price £6.95

Presentation: **★★**  
Skill level: **★★**  
Interest: **7**  
Value for money: **★★**

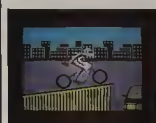
This one comes straight from the heart of the gutter (press). It's a five-part piece of arcade garbage that sails so close to the wind that it's author may well find himself on a one-way tour to the Tower.

The destiny of the nation is in your hands. You must help the Royal Couple do what comes naturally whilst listening to suitably regal procession music (no, it's not Careless Whisper).

Screen one is a lousy-turkey version of Space Invaders, with the marines replaced by porters and the mother ship

by a nappy. The potty bombe bring a whole new dimension to the idea of SPLATI. Though it adds weight to the argument that royals are just like you and me.

Successful retaliatory shots to the potty bombe (number two screen, you might say) with toilet rolls bring you to the next stage. This is where it starts getting a little naughty. You must lead Charles to the lavies of his nappied bed. If everything goes according to the laws of nature then it's your job to watch over



## Eddie Kidd's Jump Challenge Commodore 64 Digital Integration Price n/a

Presentation: **★★★★**  
Skill level: **★★**  
Interest: **★★**  
Value for money: **★★★★**

The list of celebrities now endorsing computer games seems never ending. At the last count we had Rolf Harris,

Tony Hart, Lee Majors, the Strenglers, Thompson Twins, Shakin Stevens, the arnie crew from Dallas and Rod and Rat. So it comes as no surprise that stunt bike rider - Eddie Kidd should want to jump on the bandwagon.

Eddie was at the Personal Computer World show in September in all his gear, signing autographs, and assuring all and sundry that he was really "into" computer games.

The fact that Eddie was brought in for

his name alone matters not a jot as the game is an excellent one with some really impressive graphics.

The idea of the game is to successfully jump as far as possible and maintain control of the bike on landing.

Before you can attempt the classic Eddie Kidd leap over several cars you must first clear a row of oil barrels.

The bike and the rider are controlled separately so that the computer is acting as the motor bike and you are actually riding it.

The function keys provide the gear controls - F1, first, F3 second, F5 third



## Bruce Lee Commodore 64 US Gold Price £6.95

Presentation: **★★★★**  
Skill level: **★★**  
Interest: **★★**  
Value for money: **★★★★**

Yet another celebrity lending his name to computer games - in this case the late Bruce Lee - the most famous exponent of the Martial Arts of all time.

Bruce finds himself in ancient Japan - his mission, a small matter of discovering the secret of eternal life.

The man who holds this secret lives high up on the summit of Mount Fuji in a fortified palace.

Determined to stop Lee from seeking an audience with the wizard are the Ninja and the particularly nasty giant

green Yemo.

Bruce will need all of his agility, kicks and punches to defeat these foes. The toughest of his opponents are the Ninjas who can dodge and kick back. The giant green Yemo can be taken out with three swift kicks.

Both the Yemo and the Ninja kick you throughout the twenty screens of the game.

To move from one level to the next you must first collect all the hanging lanterns (that level).



## Dreilbs Commodore 64 US Gold Price n/a

Presentation: **★★**  
Skill level: **★★**  
Interest: **★★**  
Value for money: **★★**

Dreilbs is that rare thing these days - a different computer game.

Play commences in a maze at the centre of the Dreilbs Kingdom. The maze is made up of swing-gates that change their position as you move through them.

The object of the game is to make as many complete squares as possible by closing the gates on the three-sided squares. Once a square has been "closed" it will begin to pulsate. You have to secure all the potential squares

on the grid.

Out to stop you are the Trollaboars who can also flip gates. The Trollaboars are the evil destroyers who are out to wreck your square building prog. Your only defence against the evil T's is to trap them temporarily in completed squares.

Once all your squares are complete some of them will turn into Dreilbsish windows - you can hop through these into the dark corridor.

You are now in the land of the Gorgo-

## ● SCREEN STAR ●

wily-nifty. Security lasers, slides and conveyor belts will provide headaches especially as the Zone Master is ready to snatch a life for slow progress.

In a nut shell, Rocket Roger is an imaginative, obstacle strewn quest for treasure with a complement of integral lactic intruders likely to provide hours of engrossing entertainment. But only after you have perfected the delicacy of touch to exploit the rocket-pack fully. I'd be content to explore the whole play area in alone "win".

Rocket Roger is further proof that there is plenty of programming talent left at Sheffield-based Alligate, despite the departure of one Tony Crowther-Superstar.

Even if Tony's leaving has not had too serious an effect on the fortunes of Alligate it has made them slightly paranoid about talking to computer mags. One Alligate programmer apologetically got the idea of branching out on his own as a result of the magazine interview.

Or for the next nine months.

She must fulfil her engagements by avoiding or shooing persistent press hounds (the game might yet go down well at Buck House). Finally it's time for that mad dash to the hospital via a scrolling maze with all obstacles. Finally our heroine is forced to negotiate a ladder complex evading a syringe and catching the baby as it's dropped by a flight of peering storks (that'll teach them not to use the NHS).

Yes, it's really this mucky. WE ARE

NOT AMUSED, and neither it seems are those concerned - all we could get from Buck House was a terse 'no comment'. This game is for bad taste enthusiasts everywhere. Loyalists will hate it, Withe Hamilton supporters will love it.

The royale have so far invaded the attention of software houses - about the only part of the publishing world that has so far not tried to capitalise on royalty. It can surely only be a matter of time though, before we will be made to cringe at Royal adventure games.

and F7 fourth. The Commodore key causes the mine to swerve to one side at low speed or can be used to abort a jump at the last moment if you judge that your speed is not sufficient to clear the obstacles.

The key to success in the jump game is to judge the speed accurately to get safely over the obstacle.

Eddie can be made to stand, lean forward, crouch down, or lean back in order to balance his bike.

The most exciting part of the game is when you take off and sail through the air watching those cars cruise past be-

neath you. If you should clip the last one Eddie falls and the bike spins hopelessly out of control as brakes squeal and you can hear metal hitting metal.

Apart from the jumps it is also possible to attempt other stunts - such as wheelies. To do a wheelie you simply build up speed and pull back on the joystick to make Eddie pull the handlebars up.

Although the graphics are tremendous I'm not sure there is enough of a lasting challenge to this game. That slight worry aside it is still bound to be a great hit with Eddie Kidd fans.

As well as punching and kicking the enemy Bruce can also be made to leap, jump and duck.

One great strength of this game is the options - there are lots of them. You can play against the computer, or an opponent, or two of you can team up to take on the computer.

Points are awarded for various achievements. Kicking the Ninja earns 70 points, a kick is worth 100, taking a lantern earns 125, knocking out a Ninja is worth 200, and knocking out a Yamo

earns 400. Every time you enter a new room you get two thousand points bonus.

The largest bonus of all is awarded for killing the wizard - a massive 300 points. An extra Bruce is awarded when you reach 40,000 points and for every subsequent thirty thousand points after that.

Bruce Lee was the first of US Gold's really big hits when it was launched on the Atari earlier this year. Now 64 owners can get in on the action.

bytes who have enslaved the Dieble. It's down to you to free them - by making contact with as many Diebles as possible. The Gorgoyles attempt to push you back onto the Dieble's master.

If you succeed in the dark corridor you can then get onto the bonus screen. The points you earn here will go towards freeing all the Diebles still held captive.

There is one other way to get onto the bonus screen - by beating the Mystery Lady. Her beautiful, but sad face will appear in one of the Gorgoyles squares for

an instant. If you are successful in stealing your kiss you will jump to the bonus screen. Only when all the Diebles have been freed will you discover the secret of the Mystery Lady.

Once you have beaten to the bonus screen the round starts again. There are eight different rounds altogether: Super Hero, Emerald, Topaz, Pendul, Agate, and Amethyst.

Fun to play and commendably different.



**Fighter Pilot**  
**Commodore 64**  
**Digital**  
**Integration**  
**Price £9.95 cass**  
**£14.95 disk**

Presentation: \*\*\*\*  
Skill level: \*\*\*\*  
Interest: \*\*\*\*  
Value for money: \*\*\*\*

In the battle for supremacy in the games market the British hits have been few and far between.

American imports with games like *Beach-Head*, *Bruce Lee* and *Boulder-Strike* have been cleaning up in recent weeks.

So it's nice to see one British computer game, the various Yanksoft offerings in the digital light to produce the best *Royal Air Force* flight game.

The game is *Digital Integration* your aircraft at the threshold of the run and the game is *Fighter Pilot* - now way back taking due North. Take off is available for the 64 after its Spectrum slightly earlier (this mode than in some version topped the games charts for the latter stages).

The game features all the superior controls and graphics that we have come to expect from Spectrum to 64 conversion. You can now take the USAF F15 Eagle into combat - which is *Fighter Pilot*'s great strength over traditional flight games.

Flight controls and game play options are many and varied. You can practice landings - one of the trickiest manoeuvres that any pilot has to cope with - or you can attempt blind landings which eliminates landing in the fog. This does not sound difficult enough for you, you can also add extra hazards like crosswinds and turbulence.

To activate your guns, press the space bar - although you can only use them in combat mode. As with all the other modes in the game *Combat mode* has the training mode as well.

Training mode puts the enemy at a more than a mile from the enemy, disorientingly unfair disadvantage - you can fire at them but they cannot fire back. All hits are registered by a beep. If you just like blasting things then change in colour on your radar. If you can have great fun with the training mode find it necessary to turn it to mode - watching the enemy drift into get repairs the enemy will look on to your sights and then pack them off like original target and set off to destroy flying elephants.

None of the other flight games. For my money *Fighter Pilot* is the best tested game close to *Fighter Pilot* for flight game now available for the 64.



complexity and game-play. *Spirit of Aca* from US Gold - sounds like it should be a British game - has none of the sophisticated controls of the *Digital game* and none of the play options that make *FP* easy to get into but difficult to master.

There are no less than sixteen different commands that it is possible to enter - giving some of the real complexity of the game.

*Fighter Pilot*'s programmer, Dave Marshall, is uniquely qualified to write a flight game - having worked for several years on computer systems for the Royal Air Force.

The flying training option positions the aircraft at the threshold of the run and the game is *Fighter Pilot* - now way back taking due North. Take off is available for the 64 after its Spectrum slightly earlier (this mode than in some version topped the games charts for the latter stages).

The game features all the superior controls and graphics that we have come to expect from Spectrum to 64 conversion. You can now take the USAF F15 Eagle into combat - which is *Fighter Pilot*'s great strength over traditional flight games.

Flight controls and game play options are many and varied. You can practice landings - one of the trickiest manoeuvres that any pilot has to cope with - or you can attempt blind landings which eliminates landing in the fog. This does not sound difficult enough for you, you can also add extra hazards like crosswinds and turbulence.

To activate your guns, press the space bar - although you can only use them in combat mode. As with all the other modes in the game *Combat mode* has the training mode as well.

Training mode puts the enemy at a more than a mile from the enemy, disorientingly unfair disadvantage - you can fire at them but they cannot fire back. All hits are registered by a beep. If you just like blasting things then change in colour on your radar. If you can have great fun with the training mode find it necessary to turn it to mode - watching the enemy drift into get repairs the enemy will look on to your sights and then pack them off like original target and set off to destroy flying elephants.

None of the other flight games. For my money *Fighter Pilot* is the best tested game close to *Fighter Pilot* for flight game now available for the 64.

# SCREEN SCENE

## Orpheus in the Underworld Commodore 64 Sterling Price £9.95

Presentation: ★★★★★  
Skill level: ★★★★★  
Interest: ★★★★★  
Value for money: ★★★★★

This is Puffin! but with Egyptian decor and a Hellenic hero. "Can-Can" is the dominant tune as you would of course expect from the title. But two other jingles provide some variation.

The 120 screens are littered with various combinations of hazards garnered from the following: pits, boulders (rolling or stationary), floor traps, white birds, poisonous green plants, moving saws and the essential magic vanishing holes. Below ground there is a continuous barrage of fireballs. Each subterranean

screen is the equivalent of two on the surface.

Skills required are accurate well-timed leaping with hopping and ducking, equally essential: adeptness at rope swinging doesn't go amiss either. By taking advantage of the CHEAT keys it is possible to scroll your way through all the screens without losing a life, admiring the hieroglyphics and motifs as you grab the point-giving goodies. A good, colourful version of a well defined game.



## Stock Car Commodore 64 Micro Power Price £6.95

Presentation: ★★★★★  
Skill level: ★★★★★  
Interest: ★★★★★  
Value for money: ★★★★★

An updated, sophisticated example of that perennial filler for "Volcano, Type it Yourself, Bugridden Games for your 64" books. Crash, bash, steer, skid and accelerate your way round 6 different tracks having selected the skid factor, overall speed and number of laps before the off. Oil patches can be splashed about for less friction, but added fun.

There are four cars on the track with the 64 controlling 2 or 3 (depending on how many more humans are playing)

all you have to do is steer and change gear.

Having blustered your way to victory with "Congratulations" still ringing in your ears it's time to enter the Hall of Fame spelling your name with the aid of another car. Relocking your foot for those of you out there who get bored with the Scalextric getting bent and buckled all the time.



## Chartbuster Commodore 64 Alligata Price £9.95

Presentation: ★★★★★  
Skill level: ★★★★★  
Interest: ★★★★★  
Value for money: ★★★★★

Devastatingly good value, comprising five games on one tape (and they all lord it!) Blagger is a 30 screen Platform indulgence. Collect all the keys and open the safe on each and every frame.

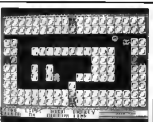
Killer Wirtz has you flying a saucer around a cavern pecking light bulbs, avoiding walls, and zapping dolphins which leap up from scattered ponds. Purple ducks and bouncing bombs populate the trickier levels. A really good game.

Parve Point is a straightforward ver-

sion of the arcade classic. Dig holes and bash the red monsters when they fall in. Take too long about it and they leap out and change colour.

Eagle Empire sends flocks of phoebians and waves of eagles to do battle with your space ship before you get to know the emperor in his egg fortress. Harmless fun for a pinger.

Bug Blaster is a pseudonym for Centipede and is as good as say I've seen with hordes of invertebrates to torment you.



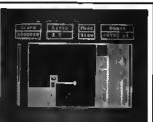
## Frenzy Commodore 64 Micro Power Price £6.95

Presentation: ★★★★★  
Skill level: ★★★★★  
Interest: ★★★★★  
Value for money: ★★★★★

Qix or Shik has surfaced again, this time with the enlisted support of "A Winter Shade of Pale". Completely out on its own scenario wise, the player guides a module to partition the screen, trapping a maine stick within the last 5% of the screen or better still drowning the labid rod with a flood of colour.

There are two modes of progress: slow (green) and fast (red). The former worth more points. Each time contact is made with the screen edge or previously constructed line. Bigger! the col-

ourning routine shades in the captured area. Of course, should the whizzing wand clobber you during mid line you lose a life so it pays not to be too greedy (but, of course it's no fun if you're not!). On later screens "perimeter chasers" hunt you and the sticks multiply. The lure of this game is inescapable: it's ridiculously simple and yet totally absorbing. You really should have this in your collection!



## Hooper Commodore 64 Calisto Price £7.95

Presentation: ★★★★★  
Skill level: ★★★★★  
Interest: ★★★★★  
Value for money: ★★★★★

Yet another game chopped up, rehearsed and served up as something new. A split second after the last byte has been transferred from the accumulator, I sensed that this game was a direct descendant of Crazy Painter that's the game where you dash round a grid colouring in the squares whilst perfecting your skill at avoiding the pit-bouls: missiles selected from the day's menu.

A supple wrist is essential or failing that, Paul Danie's fingers (all 20 of

them!) if you must use the keyboard. The music was just recognisable as Ronco à la Turke: rest easy Wolfgang Amadeus.

This variant has you collecting jelly beans as a mission in life. Competent with deep reserves of tribulations to try your skill through six screens and eight speeds, but not the best available. So what's the point of doing it? More originality less repeddling of old ideas please, softwarehouses.



**Choc-a-Bloc  
Charlie  
Commodore 64  
Lothlorien  
Price £6.95**

Presentation **★★★★**  
Skill level **★★★★**  
Interest **★★★**  
Value for money **★★★★**

Reputedly there are 16 levels of play in this two-screen super loughie. The set up is like *Pengy* but the plot is a wilderness. To escape he needs to create his own doorway by collating four purple blocks, which are embedded in a maze of useless white squares. Isolated blocks may be pushed aside whereas others can be given the blast treatment. This course of action is energy draining, as is combat with those druids carelessly released on moving

the purple pieces of Lego. Obviously they head penning in or avoiding, as do the lime bombs left by the ultra helpful resident meane. Gold blocks may be pushed through your exit for bonus points prior to your departure to the land of whirly wheels. The lucky blighter is a real head scratcher: my progress was pitifully slow, excuse me while I practice for as personally

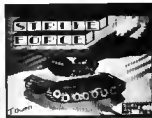


**Strike Force  
Commodore 64  
Bubble Bus  
Price £6.99**

Presentation **★★★★**  
Skill level **★★★★**  
Interest **★★★**  
Value for money **★★★★**

The title page depicts a tank and for some unknown reason plays the theme from *Mish*. From then on you are inside the tank looking out along the gun barrel, scouting the horizon by scrolling the screen at will. Although the Ballistic trajectory of your fire is not as convincing as *Beach Head* of 3D Tank the game plays off effectively you explode the height at which your shells explode via markers, as well as the direction. In the first wave scouting helicopters have to be downed as they chatter across

the mountainous landscape. These are mainly paving the way for a bomber raid on your base: engage those foes on screen two. Assuming your bombs haven't nullified your defensive capacity you get to take on enemy vehicles in the final stage, as they swim through your HQ. Scroll, search and destroy. The difficulty levels (6 factors to set) may be finely tuned to taste. Graphics and sound are ok but not on the same peak as *Beach Head*.



**Warlok  
Commodore 64  
Callisto  
Price £7.95**

Presentation **★★★★**  
Skill level **★★★★**  
Interest **★★★**  
Value for money **★★★★**

OK, you're a Scramble fan but feel the old timer needs revamping to present a fresh challenge. Well Warlok has bitten off chunks from its feline's forebear, thoroughly chewed them up and regurgitated a highly interesting spin-off. Up to four stages can be selected or certainly don't pretend to have mastered them with hazards presented differently enough from Scramble to warrant its devotees lurching out to grab a copy. Nine mazes guided by blipping laser

screens glittering bouncing cannon balls, space spiders(?) dragging from threads and indestructible droids are some of the delights that await you in the cavern. And, yes, energy has to be topped in the time honoured fashion. The graphics are not from the very edge of innovation but from what I've seen so far they deserve the thumbs up. Silky scrolling and percussive sounds but no "Dance of the Sugar Plum Fairy", or similar, to sooth the troubled brow.



**Cave Fighter  
Commodore 64  
Bubble Bus  
Price £6.99**

Presentation **★★★★**  
Skill level **★★★★**  
Interest **★★★**  
Value for money **★★★★**

By allowing yourself the luxury of 98 lines, it is possible that all the 3D preferable scrolling caves will reveal their secrets to you. I suppose this is a ledge, as opposed to a platform, hopping game. These are ropes to climb: leaps to be made and 16 alien cave-crawlers to stifle (well, amuse) you. A jump-counter, activated by the fire button controls the height of your leap, an important consideration in regions with restricted head room.

Danger arises to avoid are rock pools jagged edges, snapping jaws, scouling the ropes and conglomerate-ations of spitting aliens. Some of the tight squeezes appear to allow one pixel width for error. Precision is the watchword. As you would expect, the cave layouts get progressively tougher, while in each case the disposition of the nasties is entirely randomised. "Chariots of Fire" and various squeaks are processed by the SID chip in this chunk of additive entertainment.

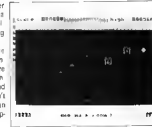


**Tazz  
Commodore 64  
Bubble Bus  
Price £6.99**

Presentation **★★★★**  
Skill level **★★★★**  
Interest **★★★**  
Value for money **★★★★**

Bug blasting has proved to be a rich vein for programmers, this latest nugget to be mined is slightly different from the norm. Your alter ego is dumped in a succession of ten rooms and mega bugs, very mobile sprite nasties whose behaviour, form and temperament vary with each cubicle. Unlucky rounds of ammo plus a renewable arsenal of smart bombs are at your disposal, giving you the wherewithal to respond everything obnoxious before the advancing wall's wreck havoc

with your overbl dimensions! After clearing each second room, up pops a bonus screen, digits and bomb to collect, but again beware of the marching mayonnaise. A good blast 'em away with an extra edge of your seat, nightmare add on. Should you find it all too easy there are another ten super rooms to tangle with. So keep your thumb on the button and your eyes on the screen if you don't want to end up as flat meat. Good fun but with no new ideas. Are screen zippers bothered?



# SCREEN SCENE

## Kokotoni Wilf Commodore 64 Elite Price £6.95

Presentation: **■■■■**  
Skill level: **■■■■**  
Interest: **■■■■**  
Value for money: **■■■■**

Highly individualistic, offbeat – weird even – according to your viewpoint. Working your way through time zones is a sure-fire interest grabber as is the challenge of mastering the idiosyncrasies of feather-powered flight. But performing just one task repeatedly could make the game a bore.

You have to flutter around a four way scrolling obstacle course avoiding the touch of just about everything, animate or otherwise, whilst endeavouring to snatch a complete set of talismans, this

being the key to the next epoch. There is something strange about fluttering around the statuetteque dinosaurs (only the small species move) but this can be accepted as "video-game logic". Quite apart from the wild world on the surface there are twisting caverns aplenty, most of the tight squeezes seem virtually impassable to any but previous flyers.

If you are dedicated enough then there is plenty of scope to stretch your wings.

### KOKOTONI WILF



## Jinn Genie Commodore 64 Micromega Price £8.95

Presentation: **■■■■**  
Skill level: **■■■■**  
Interest: **■■■■**  
Value for money: **■■■■**

An Arabian Nights style, four part pot-boiler. Before you can finally free an imprisoned sage from the custody of an evil genie there's some travelling to do. Devise home in on your flying door mat, though naturally you can vapourise

After landing at the Genie's palace an open window has to be found. This is done by eluding the guards and trying all the windows. Once inside, all the torches have to be lit though guards insist on extinguishing them, also beware of the

spider (there's always one!) who may send you reeling. With the aid of your elixir whilst the brightness finally shines forth revealing a magic jar. Into the Genie's den you drag the jar, whereupon you discover the prisoner and key, put the three together to free

the Wizard. The graphics are less than enough and you do get a helping of Eastern music. After two games at level one I was left pondering why such a lot of effort had been expended producing



## Jet Power Jack Commodore 64 Micro Power Price £6.95

Presentation: **■■■■**  
Skill level: **■■■■**  
Interest: **■■■■**  
Value for money: **■■■■**

We could soon be knee deep in Jet Pack games, so chosen with care. This example is entirely distinct from Rocket (the other name) even the "last" of the knapsack thrusts is different. If you haven't read the ad, fate has decreed that a guesstimate galactic gangster should capture and hold you incommunicado in a space garage – but of course where else?

By wielding the thruster controls to your inner will, Jack will pass with facility through a screenful of bone-shaver

ingly sharp-edged walls, alienified garage fittings, aliens generally zooming up and down like crazy with still more cussedly bobbing about at a slower rate of knots. No zooming allowed as you attempt to ferry a fuel pod to stock up the flies in your escape craft. There is very little safe ground and a scant air mix into a supply of oxygen.

Any room may be selected, so you can find gingerly through all five gauntlets at will. Not my favourite game but hard to fault.



## Ankh Commodore 64 Beyond Price £8.95

Presentation: **■■■■**  
Skill level: **■■■■**  
Interest: **■■■■**  
Value for money: **■■■■**

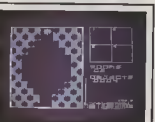
Subscribers to the theory of a parallel universe may well find food for thought here.

In theory, your conscious, elemental being has been encapsulated in a module which handily totters a gun and a retractable probe, you guide this sensor package through 64 rooms trying to unlock doors, defuse traps, accumulate treasures, pick up tools and generally ponder the nature of metaphysical reality. Experience, both visual and aural, will equip you to make progress as will

the occasional sharp shooting. Could this be thought of as an archetypal Adventure Game in a primeval, pure state? Perhaps. At any rate the interest will last as long as the esoteric conundrums haven't yielded to your diligent. Inspired examinations which in most cases will equate with some.

Be warned! ... this is a puzzle .. not a game.

● Turn to page 73 for your chance to win a copy of this exciting game!



## Mr Robot Commodore 64 Beyond Price £8.95

Presentation: **■■■■**  
Skill level: **■■■■**  
Interest: **■■■■**  
Value for money: **■■■■**

First master machine code, then study games design, majoring in the platform idiom and you will be all set to produce "I was meaner mixer's double". No need to trouble as appended to Mr Robot is a factory where creating testing courses for level hoppers is as easy as well as pressing the fire button. At the foot of the screen are all the units needed to conjure up an acedlan's dream edit and position the building blocks with the cursor. Your brain-child may be played at museum but only disk users can save the extra screens for posterity.

The game itself features 22 screens – from "getting started" to "in theory it can be done" – classic, heh-heh-skillet gathering from inaccessible ledges. Features? Greasy poles, escalators, trampolines, good bounces, ammunition, energisers, pits, bombs, ladders (naturally), treadmills et al. Patrolling the ledges are hairy aliens which need extinguishing, that just leaves the transporter module to me.

Good, brazen use of colour plus the ability to select any screen makes this a bumper luncheonette.



# Deals • for Readers

Make your disks go like lightning!  
**1541 EXPRESS**

Ingenuous plug-in cartridge accelerates disk transfers - see the October review for full details. By RAM Electronics, who really do these things well.

Normal price: **£49.95**  
**OUR PRICE: £45.95**

**VICSPRINT for Vic 2 & 64**  
**Trippler Interface**

Send IEEE to Centronics converter which doesn't use any program memory space. Plugs into the user port on Vic or 64 to interface with most printers (either daisywheel or dot matrix), and will work with most commercial packages. A RAM Electronics product. ARP £49.95

**OUR PRICE £45.95**

## Order Form

Prices here include VAT and P&P within the UK and Ireland. For delivery elsewhere, please add overseas postage on each item as follows:

Item	Europe	Elsewhere
Books, binders, cartridges, assemblies	2.00	4.00
Tapes, video appliances, tee shirts, covers	0.50	1.50
Everything else	1.00	2.00

All offers subject to availability. Please allow 28 days for delivery. If there is anything else you would like to see in Deals for Readers, please list below.

### FOR THE 64

THE COMPLETE 64	no. <input type="checkbox"/> at £7.95 =
SUBROUTINE COOKBOOK	no. <input type="checkbox"/> at £7.95 =
PIXEL PAIDS FOR THE 64	no. <input type="checkbox"/> at £4.95 =
RAM 1541 EXPRESS	no. <input type="checkbox"/> at £45.95 =
RAM VICSPRINT INTERFACE FOR 64	no. <input type="checkbox"/> at £45.95 =
SIMPLY WRITE 64 TAPE WORD PROCESSOR	no. <input type="checkbox"/> at £34.95 =
SIMPLY WRITE 64 DISK WORD PROCESSOR	no. <input type="checkbox"/> at £34.95 =
OSIRISAN 64 TAPE ASSEMBLER	no. <input type="checkbox"/> at £17.95 =
OSIRISAN 64 DISK ASSEMBLER	no. <input type="checkbox"/> at £22.95 =
COMMODORE USER TOOLKIT CARTRIDGE	no. <input type="checkbox"/> at £27.50 =
DAVID'S BASIC CARTRIDGE	no. <input type="checkbox"/> at £27.50 =
SPECIAL OFFER: BOTH TOOLKIT & DAVIDS	no. <input type="checkbox"/> at £50.00 =
INFOTAPE DATABASE (TAPE)	no. <input type="checkbox"/> at £9.95 =
0000LE GRAPHICS PACKAGE (DISK)	no. <input type="checkbox"/> at £17.00 =
ARROW CASSETTE ACCELERATOR CARTRIDGE	no. <input type="checkbox"/> at £26.00 =
HELP TOOLKIT CARTRIDGE	no. <input type="checkbox"/> at £22.50 =
CENTRONICS INTERFACE CARTRIDGE	no. <input type="checkbox"/> at £22.00 =
RS232 INTERFACE CARTRIDGE	no. <input type="checkbox"/> at £29.95 =
64 COMPILER (DISK BASED)	no. <input type="checkbox"/> at £16.00 =
64 COMPILER (TAPE BASED)	no. <input type="checkbox"/> at £13.45 =
MUSICALC 1 DISK (SYNTHESIZER & SEQUENCER)	no. <input type="checkbox"/> at £45.99 =
MUSICALC 2 DISK (SCOREWRITER CBM) 525, EPSON	no. <input type="checkbox"/> at £34.99 =
MUSICALC 3 DISK (KEYBOARD MAKER)	no. <input type="checkbox"/> at £34.99 =
SPECIAL OFFER: MUSICALC 1, 2, 3	no. <input type="checkbox"/> at £110.00 =
MUSICALC DEMO DISK	no. <input type="checkbox"/> at £6.00 =
TOTAL ORDER	
PLUS OVERSEAS POSTAGE IF ANY	

### FOR ANY USER

THE GOOD COMPUTING GUIDE	no. <input type="checkbox"/> at £2.95 =
VIDEO SPLITTERS	no. <input type="checkbox"/> at £1.75 =
MUSICALC DEMO TAPE (AUDIO)	no. <input type="checkbox"/> at £3.00 =
COMMODORE USER SWEATSHIRTS	no. <input type="checkbox"/> at £7.75 =
COMMODORE USER TEE-SHIRTS	no. <input type="checkbox"/> at £3.75 =
COMMODORE USER BINDERS	no. <input type="checkbox"/> at £2.99 =
COMPUTER DUST COVERS	no. <input type="checkbox"/> at £2.50 =
CASSETTE DUST COVERS	no. <input type="checkbox"/> at £2.00 =
BUTTERFIELD'S DIARY	no. <input type="checkbox"/> at £3.99 =
FOR THE VIC	
VICTAPE 1 (GAMES FOR ANY VIC)	no. <input type="checkbox"/> at £1.99 =
VICTAPE 2 (FOR UNEXPANDED VICS)	no. <input type="checkbox"/> at £1.99 =
SPECIAL OFFER: BOTH VICTAPES	no. <input type="checkbox"/> at £3.99 =
GETTING THE MOST FROM YOUR VIC	no. <input type="checkbox"/> at £7.95 =
GRAPHICS AID PACK FOR VIC	no. <input type="checkbox"/> at £4.20 =
RAM VICSPRINT INTERFACE FOR VIC	no. <input type="checkbox"/> at £45.95 =
SIMPLY WRITE VIC TAPE WORD PROCESSOR	no. <input type="checkbox"/> at £34.95 =
SIMPLY WRITE VIC DISK WORD PROCESSOR	no. <input type="checkbox"/> at £34.95 =
OSIRISAN VIC TAPE ASSEMBLER	no. <input type="checkbox"/> at £17.95 =
OSIRISAN VIC DISK ASSEMBLER	no. <input type="checkbox"/> at £22.95 =
GOLDEN GREATS PACK NO 1	no. <input type="checkbox"/> at £6.95 =
GOLDEN GREATS PACK NO 2	no. <input type="checkbox"/> at £6.95 =
GOLDEN GREATS PACK NO 3	no. <input type="checkbox"/> at £6.95 =
SPECIAL OFFER: ALL THREE PACKS	no. <input type="checkbox"/> at £19.95 =
STACK'S VICKIT 2 EPROM	no. <input type="checkbox"/> at £4.90 =
STACK'S VICKIT 2 CARTRIDGE	no. <input type="checkbox"/> at £11.25 =
STACK'S VICKIT 3 EPROM	no. <input type="checkbox"/> at £4.90 =
STACK'S VICKIT 3 CARTRIDGE	no. <input type="checkbox"/> at £11.25 =
STACK'S VICKIT 4 EPROM	no. <input type="checkbox"/> at £4.90 =
STACK'S VICKIT 4 CARTRIDGE	no. <input type="checkbox"/> at £11.25 =
RAM 'N' ROM CARTRIDGE	no. <input type="checkbox"/> at £9.00 =
IEEE INTERFACE CARTRIDGE	no. <input type="checkbox"/> at £26.40 =
VIC FOUR-SLOT MOTHERBOARD	no. <input type="checkbox"/> at £13.80 =
8K STOREBOARD CARTRIDGE	no. <input type="checkbox"/> at £20.50 =

TOTAL ENCLOSED

Postal orders, cheques or money orders should be made payable to DEALS FOR READERS. Or use Access

NAME 4 THIS IS YOUR DELIVERY LABEL - PLEASE PRINT CAREFULLY

ADDRESS

ACCESS CARD No

DATE

SIGNATURE

## STACK FOR THE VIC

**EPROM £4.90**  
**CARTRIDGE £11.25**

**EPROM £4.90**  
**CARTRIDGE £11.25**

**EPROM £4.90**  
**CARTRIDGE £11.25**

**IEEE Cartridge:** run Pet peripherals on the Vic  
 EURO 00 our price  
**£26.40**

**Storeboard:** plugs into the cartridge slot to add 500 extra memory and a freebie Victor 2. RRP £30.00 our price **£20.50**

**KEEP IT CLEAN**

**KEEP IT CLEAN**  
Keep your cassette and computer clean with matching black covers—effective, efficient.

**Snore keepers?** Things falling past the eyes into the corners of the tape heads? Don't take the chance. When you're not wearing your Vio or SA, slip over one of our tailored Corner Guardz discoveries - a smart, clear, textured, durable, machine-washable, logo on top, black meshie featuring the magazine's logo on top, black meshie featuring the magazine's logo on top. They do keep out dust, but they'll also cope with coffee splashes (anything less than a thunderstorm in fast) paperclips, cigarette ash, the residue of long-haired cats, and the general detritus of daily life.

**£2.50**  
computer covers  
**£2.00**  
cassette covers

**£4.25**  
one of each

**£2.50**  
computer covers  
**£2.00**  
cassette covers

**Save a fiver – £50 for the pair!**



To take advantage of these offers just fill in the order form on the back page.

## WEAR YOUR MAG!

Commodore User tee-shirts and sweatshirts are in good quality cotton, ideal for late nights in front of the computer or the beach at Torremolinos or the lounge bar at the Pig and Whistle

Tee-shirts  
**£3.75**

Cobalt blue with the magazine's logo big and bold across the chest. Same size when ordering we have small, medium, large and extra large

Sweatshirts  
**£7.75**

## OSIRIS SYMBOLIC Assembler/Disassembler

A major update and enhancement of the well reviewed (June 84) Predator Osiris assembler from Elmsoft. Enrich allows synthesis of your own programs source text will additionally now get the powerful version 3.0

Tape: **£17.95**  
Disk: **£22.95**

## Instant database for your 64

### INFOTAPE

Why buy lots of different data storage systems when just one will do? INFOTAPE 64 is a powerful yet easy to use database system for tape users and stores up to 3,000 data items with you defining the number of fields per record. Totally flexible, and interpretive in nature, with the word based the command of what data is stored and how. And file characteristics may be changed after the file has been created. Powerful 16-function calculator is built in. Ignoring spreadsheet capability. A full report generator is included to provide anything from a command label for a mail shot to tabular reports

Normal price: **£16.95**  
OUR PRICE: **£9.95**

**Special Offer:** When you upgrade your system to use a disk drive, INFODISK will be able to retrieve your tape records, and your INFOTAPE orders from us comes with a £20-off voucher against the disk version!

## BINDERS - £2.99 FALLING APART?

Our Commodore User binder holds 12 issues of the original size magazine (and Vic Computing for you!) Dark blue with the magazine's name in gold, smart sturdy and sensible - the mags are held in by strong elastic grips easier and faster than the other kind of binder that has metal rods for the purpose

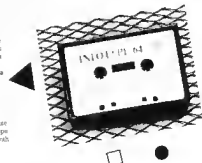


## SIMPLY WRITE

Simple, low-cost word processing for Vic or 64

You won't find a better word processor at the price. Has all the functions you'd ask for from a £300 package, and it's friendly and easy to use too

Disk or tape at only **£34.95**



## STACK FOR THE 64

### Zap-proof joystick £7.95

Stack claims this joystick is "almost" unbreakable: we'll vouch for that. Non-slip rubber sucker feet, two fire buttons, shaped grip.

### Four-slot Switchable Mother-board for the 64

Instant expansion for the 64. Plugs into the cartridge slot lets you plug in up to four cartridges

Normal: **£34**  
**£29.95**

### Instant Interfaces

Plug any printer into your 64

Run any printer (or plotter, or maybe even modem) on your 64. These interfaces by Stack convert the 64's odd IEEE signals into something the printer can handle

Centronics Interface.  
Normal **£24.00**  
**£22.00**

RS-232C Interface:  
Normal **£33.00**  
**£29.95**

### The HELP Cartridge for the 64

All those extra commands you want!

A programmer's aid cartridge for the 64 from Stack. Adds twenty toolkit commands to Basic (auto line number and renumber, find, step, trace, etc. plus hex-dec converter) and a comprehensive monitor and disassembler and several single key disk-handling commands.

Normal price **£25.00**  
OUR PRICE **£22.50**

### The Arrow Cartridge Tape save/load seven times faster!

**£26.00**

This Stack cartridge for the 64 gives not just the high-speed cassette operation... but also a full version of the TIM Machine Language monitor... and fast-forward to any of nine predetermined positions on a cassette... and a hex dec converter with hex arithmetic built in.

### CBM 64 Basic Compiler

This turns your normal Basic programs into superfast machine-language-speed code! On tape.

Normal Price **£14.95**  
OUR PRICE **£13.45**

**MusiCalc**  
MusiCalc is a Suite for Readers product  
— see the MusiCalc ad  
in this month's issue

## BOOK

## Corner

The most useful books we've found for the Vic & 64.

### Dennis Jarrett: Getting the Most from Your Vic-20:

Just bought a Vic-20? Then you'll need this comprehensive, carefully designed book to help get to grips with it

### Commodore 64 Subroutine Cookbook: David Busch

For would-be programmers everywhere. It's concise and accurate with excellent line-by-line descriptions guaranteed to turn you into an expert.

### The Complete Commodore 64: Dennis Jarrett

Another excellent book - covering all the angles of the 64 to help both beginners and experts alike.

### The Good Computing Book For Beginners (3rd edition):

The essential A-Z on computing. Writely scripted, well thought out but most of all thorough.

# COMMODORE USER

**Deals For Readers**  
01-291 2449

Save over £50.00 in this month's catalogue with a wider range of deals on the best of Vic and 64 products.

Some of them, like the dustcovers and the Victuals tapes, we have produced ourselves. The others are things that we regard as Good Ideas and Good Value, mostly items reviewed in Commodore User.

On most of those we have fixed up discounts for readers (and while we aren't allowed to sell books at cut price, we can include P&P in our price)

If you want to take up any of the offers, just use the Order Form on the back page.

**Doodle** A drawing package with stunning results  
Full drawing and painting package with room facilities for intricate drawing and editing. More accurate than light pens - as spectacular as Koala at a fraction of the cost! Output for printers including 1541, Gemini, Oladate, Prowriter and Epson

**OUR PRICE £17.99**

**Pixel Pads** all you need for excellent screen design!  
All the programming information you need to create really stunning screens and user defined sprite graphics, and dozens of design sheets to work from

**OUR PRICE £4.95**

## VIC TAPES

the pick or reader's programs for the Vic

**VICTAPE ONE** - ten games for any Vic

**VICTAPE TWO** - ten games for expanded Vics

**PRICE: £1.99 PER TAPE**  
**SPECIAL** - both VicTapes for **£3.00**

**Fantastic Value**  
**10 GAMES**  
**for £1.99**

**Video Splitters** - £1.75  
Aerial and computer both on your TV!

This nifty little gadget plugs into the aerial socket at the back of your TV set, and it means you can have the Vic 64 and the aerial attached at the same time. No more boring fiddling around to change the plugs, no more unnecessary strain on the wiring!



**FREE**

**WITH EVERY ORDER**  
**OVER £25.00**

## COMMODORE REFERENCE DIARY

**Butterfield Diaries:**

Crammed with hints and tips, this compact robust edition is a must to get you and your 64 through 1985!

**£3.99**

## GOLDEN GREATS

Vic Games from Audiogenic

**PACK ONE:** Amok • Alien Blitz • Bonzo

**PACK TWO:** Country Garden • Kaktus Mangrove

**PACK THREE:** Shift • Pit Golf

All-time favourites - action and colour, great for the kids.

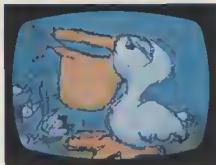
**OUR PRICE:**

£5.99 per pack of three.

**SPECIAL - ORDER ALL THREE**  
**PACKS FOR £17.99**



# CREATE SUPER VIDEO GRAPHICS



Menu selections on the screen can be conveniently displayed while the graphic is being created. In this way, the user will not lose sight of the drawing by constantly switching back to the menu, as in most touch pad products. For exhibiting or reproducing your completed graphic, the menu and cursor can be eliminated from the screen with the touch of a button.

The "Expert Menu" adds a variety of computer automated features such as circles, boxes, rays, lines and copy among others. A "Files Menu" allows the user to save pictures and retrieve them from a stored data bank. This command supports disk and tape storage.



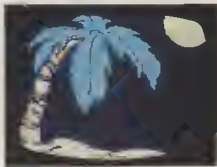
**£59-95**

**FOR THE CBM 64**

Until now, creating computer graphics in colour has been both a demanding and expensive endeavour. The "Super Sketch" Graphics Tablet provides a totally unique and simple medium for creating video graphics at a surprisingly low cost.

By simply moving the stylus control arm, as you would a pencil, Super Sketch reproduces the movement on the video screen. Four control buttons at the top of the tablet assist in operating the graphic functions of the software. Graphics may be created by "free hand" or by "tracing" from drawings clipped to the pad.

Compared with other computer graphic products, it is much easier to use than keyboard controls, does more than joysticks, paddle controllers and mouse controllers, and is less expensive than touch pad products.



## Comes Complete In One Package

Included in each package is all you need to create super graphics. A software cartridge is included in each package along with the Super Sketch controller pad (as described on the package). Also included is a comprehensive instruction manual and a "Starter Kit" that consists of several drawings that can be traced from the pad.

**STONECHIP ELECTRONICS**

Brook Trading Estate Deadbrook Lane Aldershot Hants GU12 4XG Tel 0252 333361

Please forward to me the following products.

„Super Sketch Graphics Pack at £59.95 inclusive.  
I enclose a cheque/postal order for .....  
which includes VAT and Post & Packing in U.K.  
(Overseas add 15%)

Name: .....

Address: .....

Post Code: .....

Please debit my Access card 5224 .....

Signature: .....

Delivery 14 days

**HAVE AN ADVENTURE THIS CHRISTMAS WITH LEVEL 9**

The appearance of a new program from Level 9 is a flag-day for all aspiring adventures and in my household, a signal for the cat to hide under the bed for the duration against the inevitable moment when I go rampaging through the flat, a wild look in my eyes muttering ferociously about birds nudist beaches and the like. Since *Return the sequel to Snowball* is out, the cat may be in hiding until Christmas.

You don't need to have played Snowball to get into the sequel as ever there is ample documentation with the tape which in my Commodore 64 version it is also on the Spectrum. Amstrad and BBC is turbo-loaded. It starts with you agent Kim Kimberley having been trained for sabotaging the colonyskip Snowball, in a crashed stratoslider on the planet Eden. For the moment your mission is to survive the misplaced retribution by your own people but life gets very much more complicated than that solving these puzzles has nothing to do with luck you either figure your way out of trouble on Eden or die there. One major difference between

this and former Level 9 efforts is that the Spectrum and D64 versions have graphics of a very high quality and can be switched off if required. The scope of the vocabulary appears unscathed by this addition.

Even experienced adventurers will probably get fried a few times by the averaging engines of the Snowball. Before discovering how to take shelter. But, once that hurdle is passed, the real adventure begins, and it's a lulu. From the radioactive desert caused by the engine blast, you progress through a variety of hazards through some highly unlikely locations.

haven't got to that point yet, and so far Superhuman willpower has stopped me using the clue sheet provided, but I can't hold out very much longer since I am having what could be lethal communication problems with some robots.

Terrific fun, but should carry a mental health warning!

Popular Comput- ing Weekly  
7 Nov  
84



#### DISTRIBUTORS

If your local dealer doesn't stock Level 9 adventures yet, use the coupon to buy them from us, or ask him to contact, Centresoft Microdealer UK, Lightning, R&R Leisuresoft, PCS(SW), MCD, TBD etc.

☐ COLossal ADVENTURE: The classic  
 treasure-hunt game with 20  
 bonus rooms. ☐

☐ ADVENTURE QUEST: An epic pirate  
 journey through 1000 levels. ☐

☐ DIMENSION ADVENTURE: 80 minutes  
 of fun and 100 puzzle-recalls. ☐

☐ SNOWBALL: Immersive sci-fi  
 action game with over 7000 locations. ☐

☐ RETURN TO COPE: Veteran  
 adventure designer. CBI and  
 Spectrum versions have 200 locations.  
☐

☐ EUROPE OF THE IMAGINATIVE: Romp  
 through 4000 history. ☐

☐ GOLF THE VINCE Family game for  
 IBM CBI and Spectrum only  
 for £10.99 (30 runs). ☐

Computer Data £11.95  
 £9.95 CBI or  
 IBM

I ENCLOSE A CHEQUE-PO FOR £9.95  
 PER CASSETTE OR £11.95 PER DISK

My name \_\_\_\_\_  
 My address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

My micro is  
 one of those listed below with  
 at least 32K! Send coupon to  
**LEVEL 5 COMPUTING**  
 Dept 54 229 Huguenot Road  
 High Wycombe Bucks HP13 5PG



Package tours ain't what they used to be. According to Simon Veryard, you're on holiday on the Planet Thorn, a place famous for its rocket rides. Unfortunately, just like everything on holiday, they cost too much money.

But help may be at hand in the form of money bags falling from the sky. More explanation? Well, the crooks that robbed the local bank forgot to close the hatch of their getaway rocket — sounds reasonable.

You need to collect ten bags to pay for a rocket trip. Oh, and don't forget to avoid the killer Thunder Bolts and the Cyclons — citizens of the planet who don't like the idea of you frittering away their hard-earned savings when they'd rather spend it on a trip of their own. Pressing a key makes your man move to the left. If no key is pressed he automatically moves to the right. The more ambitious can speed up the game by adding extra SYS 674 to line 150.

The program loads in two parts: type-in and save them separately. Then load and run the first part before loading the second.

by Simon Veryard

### Part One

```

0 REM *****
1 REM *
2 REM * UREKA 1984 *
3 REM *
4 REM * BY :- SIMON *
5 REM *
6 REM * VERYARD *
7 REM *
8 REM *****
9 REM
10 FORI=7168TO7679:POKEI,PEEK(25600+1):NEXT
15 FORI=674TO757:READA:POKET,A:NEXT
20 FORI=OTO9
30 FORI=7168+(8*I)TO7168+(8*I)+7
40 READA:POKEI,A:NEXTI,T
50 POKE56,28
100 DATA 162,0,189,118,31,157,96,31
101 DATA 232,224,110,208,245,162,255,189
102 DATA 52,30,157,74,30,202,224,255
103 DATA 208,245,162,52,189,0,30,157
104 DATA 22,30,202,224,255,208,245,162
105 DATA 7,174,60,3,157,73,31,165
106 DATA 197,201,64,208,15,169,0,232
107 DATA 157,73,31,224,22,208,2,162
108 DATA 2,76,242,2,169,1,202,157
109 DATA 73,31,224,1,208,2,162,21
110 DATA 142,60,3,96
111 DATA 8,29,9,78,72,120,8,255
112 DATA 16,184,144,114,18,30,16,255
113 DATA 203,203,170,0,2,135,183,255
    
```



# Victuals

```

114 DATA 60,24,102,239,199,239,195,126
115 DATA 129,195,102,60,24,126,60,24
116 DATA 66,36,60,90,126,102,60,102
117 DATA 219,231,219,255,255,24,36,126
118 DATA 0,0,0,0,0,0,0,255
119 DATA 24,60,126,171,213,255,255,231
120 DATA 60,60,126,255,231,66,36,24
200 POKE36879,25:POKE36865,160:POKE36869,255
215 PRINT"[CLS][REV][BLK][CR][GRN]UREKA [BLK]- VIC 20 3.5K"
220 PRINT"[PEV][PUR][CR][50<U]"
225 PRINT"[REV][RED][CD]YOU ARE ON THE PLANET THORN COLLECTING MONE[TO BUY YOURS
ELF"]
230 PRINT" ROCKETRIDES AROUND THE ULTRASPACE!"
235 PRINT"[REV][CD][BLK]BEWARE!! [RED]THE PLANET[35PC]RAINS KILLER THUNDER[25PC]
BOLTS, AND WATCH OUT ":
240 PRINT"[REV] FOR THE MUGGER CYLONS."
245 PRINT"[REV][7CR][126<@]"
250 PRINT"[REV][BLK][2CR]P[RED][4CP][G<G][OFF][CYN]D[REV][RED][95PC][G<M]"
255 PRINT"[REV][BLK][2CR]P[RED][4CR][G<G][105PC][G<N]"
260 PPINT"[REV][BLK][2CR]E[CR][K][RED][2CR][G<G][75PC][OFF][GRN]C[REV][RED][25PC][
G<M]"
265 PRINT"[REV][BLK][2CR]S[CR]E[PED][2CR][G<G][105PC][G<M]"
270 PRINT"[REV][BLK][2CR]S[CR]Y[RED][2CR][G<G][105PC][G<M]"
275 PRINT"[REV][7CR][O<L][BLK][5G<@][OFF]A[REV][46<@][RED][O<@]"
280 PRINT"[REV][BLK][2CR]ATPED[4CR][126<L][9<G]"
285 PRINT"[REV][7CR][26<L][OFF]E[REV][96<L][G<G][HOM]"
290 FOR=160TO38STEP-1:POKE36865,T:FOR=1TO30:NEXTI,T
300 GETA$:IFA$=" "THEN300
305 POKE36869,240:PRINT"[CLS]NOW LOAD MAIN PROGRAM."

```







# CHROMASONIC

## Computer Centres

48 Junction Road, Archway, London N19 5RD Tel. 01-263 9493 5  
238 Muswell Hill Broadway, London N10 3SH Tel. 01-883 3705

### WELCOME TO THE WORLD OF COMMODORE

Maintenance, Service, Support, Training  
all from you No 1 Commodore centre.

#### COMMODORE 16

THE STARTER PACK  
Commodore 16 computer  
cassette unit  
Intro to Basic part 1  
Four games

ONLY £139.99

#### COMMODORE 64

##### PROFESSIONAL SYSTEM

Commodore 64  
1541 Disk Drive  
MPS-801 dot matrix printer  
FREE SOFTWARE  
Easy Script (wordprocessor)  
Easy file (database)  
Introduction to Basic (part 1)  
FREE MEDIA  
Box of 10 disks  
Box of paper

ONLY £599.00

#### COMMODORE 61

##### STARTER PACK

Commodore 64 computer  
cassette unit  
Intro to Basic part 1  
Quickshot II joystick  
A game of our choice

ONLY £255.00

Commodore 64 guaranteed for 2 years

#### Commodore 64

Commodore 64	£195.95
SX64 portable computer	795.00
1530 J cassette unit	£29.10
Super Saver cassette unit	£29.95
1343 disk drive	£195.95
1550 printer platter	99.99
MPS-801 dot matrix printer	£185.95
MPS-802 dot matrix printer	£285.95
MC'S 801 colour printer	£599.99
DPS-1101 daisy wheel	£799.99
1701 Colour monitor	£193.95
Z80 card	30.00
Commodore joystick	£8.50
Quickshot II joystick	£10.50
Paddles	£13.50
Muraguide	£5.35
Plinth for 64 system	£24.95
Superhiv 64 (one IEEE)	£94.95
Vic switch	£97.75
DAM's IEEE interface	£89.95
Surge protector plug	£12.95
CBM 64 to Centronics int.	£69.00
CBM 64 - Epson int.	£51.99

#### Monitors

Commodore 1701	£195.95
Microvite 14" VAP	£126.10
Philips 12" green	£79.35
64 Philips cshlt	£2.50
Monitor plinth	£31.50

#### PLUS 4

THE OFFICE AT HOME  
Built-in software  
Wordprocessor  
Database  
Spreadsheet  
Business Graphics

ONLY £299.00

#### PRINTERS

RX80T	£241.50
RX80F T	£274.95
RX100	£442.75
FX80	£399.95
FX100	£557.75
DX100	£471.50
LQ150H	£1082.50
Juki 6100	£399.95
Danavest 2000	£263.35
Ibico LTR-1	£228.85
64-centronics	£19.95
Software for above (cass)	£7.95

#### Terms

All products are guaranteed for 1 year unless otherwise stated. Payment may be made by Access, Barclaycard, Bankers Draft, Building Society cheque, cash or postal order. Sorry cheques need five days for clearance. We reserve the right to change prices without prior notice. All prices are inclusive of VAT. Please check before ordering for carriage charges.

#### 64 SOFTWARE

	cass	disk		cass
Summer Games	14.95	19.95	Flight Simulator II	42.95
Jet Set Willy	7.95		International Soccer	14.99
Zaxxon	9.95	12.95	Battle for Midway	9.95
Spitfire Ace	9.95	12.95	Ghost Busters	9.99
Superbase		RR 120	Daly Thompson's Dec	7.99
Fort Apocalypse	9.95	11.95	Decathlon	9.99
Bruce Lee	14.95	14.95	Puffin II	9.99
Solo Flight	14.95	14.95	Pure Quest	9.95
Beach Head	9.95	12.95	High Noon	7.99
Havoc		9.99	Steve Davis Snooker	7.95
Eureka	14.95			

#### MEDIA SUPPLIES

Iskasy Verbatim			
SS DD 40Tf	£19.95	SS DD 80Tf	£24.75
b DS DD 40Tf	£29.92	DS DD 80Tf	£32.75
Lockable disk storage boxes 40 80 16.50 25 25			
Disks are supplied in boxes of 10			
Computer listing paper			
11x9 5" ..... 13 80 11x9 5" ..... 12.65		11x15" ..... 15.52	
Paper is supplied in boxes of 2000 sheets			
Printer ribbons			
MPS 801 ..... 6.99	RX80 FX 80	5.00	Danavest 5.50
MPS 802 ..... 7.99	1515 1525	6.25	Juki 1.85
We also supply a range of disk covers, daisy wheels and other ribbons.			



# You should see what he's just seen.

## Micronet 800.

Stretching the mind of your micro far beyond its limits.

Micro evolution continues with this unique communications, information and software system. Set on our mainframes nationwide.

Includes 30,000 pages and access to Prestel\* with its full range of services.

A tremendous Communications section that networks you to thousands of other members across the country. Send and receive electronic messages and graphics at a touch of a button.

And there's the Chatline service, Swapshop and Teleshopping.

Check with daily updates on the very latest computer news.

Micronet also has its own huge facts data base.

And a choice of up-to-the-minute software to download absolutely free.

For only £13 a quarter and just a local telephone call whenever you want to connect up (that's only 22p per half hour at cheap rates) you could be part of Micronet.

The only accessory you need is a Modem.

A small price to pay to join the other visionaries on this exciting new system.



Fill in the coupon for more details and send to Micronet 800, Durrant House, 8 Herbel Hill, London EC1R 5EJ

But be warned, Micronet 800's features are almost limitless and constantly updating. So maybe you'd be better to call in at Laskys, John Lewis, main Boots or your local Micronet 800 Action Station.

To feast your eyes on all the amazing things it can do.

To MICRONET 800 Durrant House, 8 Herbel Hill  
London EC1R 5EJ Telephone 01-276 3143  
Please send me the full facts about Micronet 800

Name

Maker/Model of Micro

Address

Telephone

\*For 017 local telephone users

\*Prestel is a trademark of British Telecom communications.



# COMMODORE 64

POSS BOOK

Advanced techniques in programming your Commodore 64



Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

Ken Sinclair

This book is for beginners, it reads easily and explains everything clearly. Unlike the previous book it actually gets down to creating a useful filing system, but if you really need Random files then look elsewhere.

Ken Ryder

- Commodore 64 Disk Systems and Printers
- by Ian Sinclair
- Granada
- £5.95
- Worth buying



Two write programs that are actually useful and practical is the aim of this short book by Rudolf Smit.

And very good it is too. Despite the initial praise, I still feel a calendar on the loo wall and a pad on the hall table is less bother than loading a program into my 64 every time I want to check a birthday or telephone number.

The real strength of this book is not so much in its programs as in the ways they are planned and written. It is an excellent, readable introduction to structured programming with a short main line sequence and subroutines at second and third levels.

The subroutines are reached through GOSUB commands and RETURN takes the computer back to the mainline ready for the next subroutine. That is the basis of a structured program. It makes for programs that are easy to write and test, easy to follow and easy to update, alter and extend.

Don't let the apparent complexity fool you, a working knowledge of simple Basic is all that is assumed. How refreshing not to be told how to PRINT "HELLO" yet not to be expected to have ready made expertise in machine code or video chip addresses. Down to earth, clear, practical advice on planning and writing useable programs that work. A welcome addition to any "in-betweeners" bookshelf.

George Pike

- Commodore 64 Software Projects
- by Rudolf Smit
- Melbourn House Publishers
- £5.95
- A straightforward and clear introduction to designing and writing programs. A case of 'Small is beautiful'

The somewhat vague documentation that Commodore supplies with its products leaves the field wide open for independent authors. The disk drive manual is a prime example. So it's not surprising that enterprising authors should try to bridge this gap. A brief introduction is followed by a chapter on powering up, although it does not include multiple connection of disk drives and printers.

Chapter two describes the construction of a diskette with the aid of an exploded diagram, and offers good advice about their care and maintenance. Following that, the Basic disk commands LOAD, SAVE and VERIFY are explained in detail, together with pattern matching and the wedges system supplied on the Demo disk.

All the disk maintenance commands are explained, but the examples tend to be no better than those in the original manual, and are so embedded in the general text that they are difficult to identify at a glance. The authors give a warning about using the SAVE and REPLACE option of the SAVE command. They claim that there is a bug which may corrupt the disk (perhaps Tommy could comment on this).

The next three chapters cover Sequential, Random Access and Relative file systems. Error checking and the use of the status variable are introduced with short program examples as are reading and writing files. A very useful subroutine is given to change floating point numbers into strings to reduce their storage space on disk.

The chapter on Random Access files details the mechanics of reading and writing to specific areas on the disk, and mentions that a Sequential file is required to keep track of the records created. Unfortunately no detail is given on how to create and maintain such a file.

The remainder of the book contains useful tables of commands, and comprehensive explanations of each error message.

Four useful programs are included to display the contents of a Sequential file, unscratching a SCRATCHed file, software write protection of a disk and changing the name and ID of a disk without NEWing it.

The book claims to be a simple guide to using your disk drive. It is basically a replacement for the original manual, and goes no further than explaining the workings of the disk. It will not help beginners to design file handling programs.

Ken Ryder

- The Commodore 64 Disk Book
- by Tony Hetherington and Gordon Hamlet
- Century Publications
- £5.95
- Ian Sinclair's book represents better value

The second of our brace of disk books is by Ian Sinclair. It is larger than the first, enclosing 114 pages. As a bonus there is also a section on printers. In common with the previous work the book starts with a description of the hardware and floppies, including the layout of tracks and sectors.

The LOAD, SAVE and VERIFY commands are illustrated with the use of the games disk, currently supplied free with the 1541. No mention is made of the bug reported by Hetherington and Hamlett. A short subroutine to read the error channel is included together with a useful up on how to load the disk directory without overwriting the program in memory.

Hexadecimal notation is clearly explained so that you can use the DISPLAY T&S program included on page 49 of the Commodore manual. Backup procedures lead logically to the file handling commands COPY, SCRATCH etc. together with the advantages of wildcards and pattern matching.

The above mentioned games disk contains a BACKUP program, without any documentation! Mr Sinclair makes up for this deficiency by including instructions to this and the programs listed in the back of the 1541 manual. These gems are priceless.

The concept of files is introduced generally, and concentrates on Serial files specifically. Short subroutines are used to demonstrate reading, and extending a Serial file. Random Access files are relegated to an appendix, but Relative files are covered in depth. Again useful subroutines are listed. The author admits that the routines are only for learning purposes, as a Sequential file is needed to keep track of Relative files.

Unlike the first book, the next chapter carefully and clearly describes a program which creates a simple database. The system uses two Relative and one Serial file. This program may be used as a basis for something more advanced.

The final chapter is devoted to printers, describing the various types available and any interfaces needed. The Epson RX80, Juki 6100, CGP-115 and the now discontinued Commodore 1515 are individually covered. Six appendices conclude the book.

# BOOK

# Virtual

## 64 DATAMAKER — COMMODORE 64

Here's a program that converts machine-code into the DATA statements of a Basic loader.

Datamaker is a machine-code program that automatically converts machine-code

into pages of Data statements. Feed in the information (the data will be printed on the screen) and press Return to enter each line.

After typing in the program, Save it (as

usually as the slightest mistake could crash the machine. The routine is completely relocatable. For example, if your source-program is located at 49152 (\$C000) then locate the Datamaker at

32768 (\$8000), i.e. change the Poke in line 120 from 53000 to 32768 or anywhere convenient. But remember to lower the top of Basic (Poke 56,32 in this case), otherwise any Basic



```

1 REM NC-DATAMAKER      B' M. C. HART
100 REM C-64 BASIC LOADER
110 :
120 FOR J=0 TO 169:READ X:POKE 53000+J,X:T=T+1:GOTO 130
130 IF T=24979 THEN PRINT"DATA ERROR":END
140 END
150 :
160 PEM SYNTAX : S:SI(LOCATION):START,END,FIRST-LINE,INCREMENT
170 :
200 DATA 32,159,170,70,247,183,133,207
210 DATA 132,251,32,253,174,32,128,170
220 DATA 30,347,193,133,254,100,250,32
230 DATA 253,174,32,255,197,124,2,162
240 DATA 20,137,162,165,21,123,164,167
250 DATA 0,127,26,169,147,70,210,222
260 DATA 160,167,167,164,70,202,130,167
  
```

### NEW HANDIC 64 software

#### DISK BASED GAMES

WHY GET WRAPPED UP IN TAPE?

**Q-Hop** is a game featuring superb motion graphics, fast action and some very cute characters. The myriad of blocks has to be re-coloured in a race against time and two screen opponents.

HANDIC Software have developed a range of fast action and adventure games, on disk, for the Commodore 64. Q-hop (illustrated here) is a game featuring superb motion graphics, fast action and some very cute characters. The myriad of blocks has to be re-coloured in a race against time and two screen opponents.



DO YOU have the skill to re-colour all the blocks before your time runs out? You'll find out when you play the challenges of our other terrain games!

- SPIN & MATHS
- SHIP TRIP
- SHIP
- THE 4th SIB OBITUARY

Available from your nearest computer dealer or clip the coupon

### GRAF 64 software

**GRAF 64**  
For the Commodore 64  
GRAF 64 is an easy to use mathematical aid for the studying of complicated equations, functions and their graphs.

For scientific and educational use GRAF 64 is an ideal tool for those who know about equations and their graphs and those who want to find out. You type in the function or equation and GRAF 64 works it out. GRAF 64 can deal with simple functions like  $\sin(x)$  to complex equations like  $e^x$  reformulated into  $\exp(x) - x = 0$ . GRAF 64 uses the Simpson & Lordardson method when calculating areas and the Newton-Raphson method for finding intersections. Once the graph is plotted on the screen you have the option to print the graph or continue to find more graphical data. Available from your local software dealer or clip the coupon for more information.



*Victuals*

program will overwrite your Datamaker.

The program requires certain information to be able to carry out your wishes. It has to know the Start and End addresses of your machine-code

program. It needs to know the number of the first line you want it to create, and the line increment (usually 10). This information is contained within a SYS command with the syntax: SYS (the

location after the POKE in line 120) Start address, End address, First line number, Line increment (Return).

For example, to convert a machine-code program, located at 49152 (\$C000) to 53247 (\$CFFF), to start at line 1000, with an increment of ten, enter the following:  
SYS(32768/49152.53247.1000.10

The program should produce a full page of Data statements, with a pair of numbers at the bottom. Press the CLR/HOME key (unshifted), and press Return until the cursor sits below the last Data line. This enters the Data statements in the same way as if you had typed

them in.

The remaining two numbers indicate the next Start address, and the next line number respectively. Enter them in the next SYS command as before, until the READY message indicates that all the Data statements have been created.

To turn these Data statements into a proper Basic loader, add the following lines:

```
10 FOR X=(start
address)/TO(end
address):XA:
NEXT X:POKE X:A:NEXTX
In line 20, you could
insert a SYS command to
start the routine, or a
message, "PLEASE
WAIT".
```

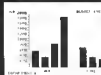
by Mike Hart

```
270 DATA 20,20,210,255,125,25,20,210
280 DATA 255,125,125,20,210,255,160,0
290 DATA 132,27,177,251,170,152,32,205
300 DATA 125,220,221,203,2,220,222,125
310 DATA 274,127,252,206,7,5a,125,253
320 DATA 227,251,134,21,220,27,125,27
330 DATA 221,2,240,2,125,14,32,210
340 DATA 255,125,0,240,212,22,215,170
350 DATA 224,125,2,101,122,127,127,144
360 DATA 227,124,220,22,125,22,21
370 DATA 20,205,125,37,215,7,122,25
380 DATA 125,222,27,22,125,125,22
390 DATA 125,222,125,127,22,125,22,22
400 DATA 125,222,125,127,22,125,22,22
410 DATA 125,125
```

# Calc Result

The Financial Spread Sheet for the  
**COMMODORE 64**

A disk and cartridge based program which will answer all your financial and number crunching questions



**£99.00**  
inc VAT

- Spread sheet size 64 x 254 x 32 pages
- Automatic formula protection
- Consolidation: Easy with the 32 pages available in calc result advanced
- Printing: Flexible printing formats out to most popular printers.
- Graph: Histogram will produce bar graphs, pie charts and line graphs.
- Software: Includes a disk and a cartridge.

- Help: Easy to use, complete and comprehensive.
- Calc result is available in a disk, cartridge or both.

Calc Result easy: A cartridge based program for the Commodore 64.

Calc Result easy: A cartridge based program for the Commodore 64.



● Calc Result Easy

● Calc Result Advanced

● Disk Games

■ Graf 64

COM 11 175

☐ I would like you to send by return post further information on the following products (please tick as required)

☐ NAME \_\_\_\_\_

☐ ADDRESS \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ Handic Software 5 Albert Road, Gresham, Berks RG11 7LT





# BEYOND

CHALLENGING SOFTWARE

Now  
available on  
Commodore  
64

**Less than human, for more than mere computer**

The *Psytron* controls the massive Betula 5 installation. When the attack comes, it will cope with defensive demands which would leave a human brain unringed, computer circuits scrambled. Damage in any sector of the base must be assessed and its effect on the fabric of the installation calculated immediately. Human lives will be expended as necessary but if the *Psytron* ever goes down...

*The Spectrum top-seller now converted to the Commodore 64 and better than ever*

## PSYTRON

Stunning graphics,  
animation which makes  
other programmers gasp,  
a 20 page booklet of hints,  
tips and help with the  
discovery of each of six  
levels of play

*Both formats now available  
at all good computer game shops*

# IN YOU WON'T FIND OR . BUT YOU WILL DISCOVER HOW TO PREVENT CONTROL YOUR OR TALK TO THE WITH YOUR



Please return this free trial computer Monthly to the publisher within 14 days of receipt. It is now being published monthly. It is now being published monthly. It is now being published monthly.

Name: \_\_\_\_\_  
Address: \_\_\_\_\_

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

The publisher of this free trial computer Monthly is the publisher of this free trial computer Monthly. The publisher of this free trial computer Monthly is the publisher of this free trial computer Monthly. The publisher of this free trial computer Monthly is the publisher of this free trial computer Monthly.

**ELECTRONICS & COMPUTING**

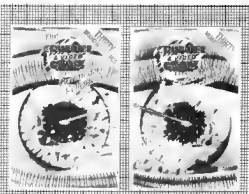
**Nothing will affect you  
(and your school or college)  
more than...**



We are a sample of educational computing. We are a sample of educational computing. We are a sample of educational computing. We are a sample of educational computing.

**EDUCATIONAL**

**COMPUTER & VIDEO GAMES**  
*Commodore Collection* *Spectrum Collection*



**Computer and Video Games**, Britain's most popular computer games monthly, brings you two exciting new books for the Spectrum and Commodore 84.

Each 100 page book contains up to 30 brand new games checked and prepared by **Computer and Video Games'** regular contributors.

At £4.99 the best value on the market at all good bookshops from November or send to EMAP Books, Bushfield House, Orion Centre, Peterborough PE2 0UW.

# Computerama 64

the source

## 64 EXECUTIVE OUTFIT

Our Executive Outfit can be tailored to your exact needs with software to match. For your personal package ring 1-800-451-1000 for our orders hotline EPOA



MP5 801 ONLY 4189  
PRINTER UN FREE PAPER

## EPSON FX80 For The Commodore 64

COMPLETE COMMODORE PRINTER OUTFIT

PERFORMANCE WITH AFFORDABILITY. Epson's new FX80 printer with 9-pin dot matrix printing and 180 dpi resolution. The FX80 is a complete printer outfit for the Commodore 64. It includes the printer, a 100-page manual, and a 100-page software manual. The FX80 is a complete printer outfit for the Commodore 64. It includes the printer, a 100-page manual, and a 100-page software manual.



## COMMODORE 1541 DISC DRIVE

1541 Disk Drive. Ring for latest offers and prices.



FREE software

We endeavor to despatch within 24 hours on stock items

## QUICKSHOT II Deluxe Joystick Controller

• NOW WITH RAPID FIRE FEATURE!  
• Remotely operate the most powerful joystick controller  
• 100% accuracy and 100% speed  
• 100% accuracy and 100% speed  
• 100% accuracy and 100% speed



REACHING THE SCORES WITH THE JOYSTICK CONTROLLER

At prices and offers on the best of our knowledge correct as of Thursday 25 October 1984

50p

MONEY SAVING!

FREE with every order five pounds worth of money saving vouchers

DEPT. CUB

1-800-451-1000

1-800-451-1000

Computerama 64

STAFFORD Stoke-on-Trent Shrewsbury

ADVERTISING	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509	1510	1511	1512	1513	1514	1515	1516	1517	1518	1519	1520	1521	1522	1523	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539	1540	1541	1542	1543	1544	1545	1546	1547	1548	1549	1550	1551	1552	1553	1554	1555	1556	1557	1558	1559	1560	1561	1562	1563	1564	1565	1566	1567	1568	1569	1570	1571	1572	1573	1574
-------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

# BEYOND

## CHALLENGING SOFTWARE

The Psi may be weaving their invisible tentacles around you even now.

They'll soon be taking total control of the world of your dreams.

Only now have we discovered it.

Only now have we compared our threat.

Only now have we seen the future.

A character you can really control, reacting realistically to every twist of the joystick, as he jinks and leaps in and out of his 3D background.



### PSI WARRIOR

Please send me Psi Warrior (Commodore 64 £9.95)

Quantity

From the authors of Psytron (Commodore 64 £7.95)

Order Hotline 0858 34567.

Enquiries 01-837 2899.

Total Price £

I enclose a Postal Order/Cheque payable to **Beyond**, or charge my credit card

Card Number \_\_\_\_\_  
Access/Via (Delete as necessary)

Name \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Signed \_\_\_\_\_

Please rush me details of the Beyond Club! ☐

**Beyond** Competition House, Farndon Road, Market Harborough,  
Leicestershire LE19 9NR

## User-friendly design—Part four

### Tying up the loose ends

by Chris Preston

In this last article in our series on User-Friendly Design, we are going to consider all the other 'little' things which go to make up a good program. 'Little' is in inverted commas because, as you may have noticed, these 'little' things sometimes take an awful lot of programming — which is why they tend to get neglected.

#### The 'Blank Screen' Syndrome

Never, ever, leave the screen blank. You should always tell the user that something is happening, even if you don't always tell him or her what it is — a user might be quite happy with 'WRITING RECORD TO DISK' but get a little worried about 'CORRECTING SOFT ERROR', or 'RETRYING FAULTY SEEK OPERATION' so we tend not to give too much detail about them, even though they happen all the time on any disk drive. Basically, the user just wants some confirmation that the machine is doing something.

A little more subtle than the Blank Screen Syndrome is the nasty habit of not showing any change on the screen after a key has been pressed. If selecting option 5 on the menu means that the program has to spend two seconds calculating before displaying the result, put a message on the screen saying 'CALCULATING DEPARTMENTAL TOTALS'. Otherwise our impatient operator is going to keep on pressing the '5' button muttering "Come on you [expletive deleted] machine" and then have to wait for 50 seconds while the obedient computer calculates the totals ten times over.

Which brings us to our next topic:

#### Don't clear the keyboard queue

On all the Commodore machines there is a keyboard queue which allows the operator to 'type ahead' that is, to enter data on the keyboard faster than the program can accept it.

Some programmers gleefully put a spinner in the words by



clearing the queue every time the program comes to a new menu; which in effect disables this facility. You can argue that this makes it easier for the first-time user to use the program, because he or she doesn't get confused if two keys are pressed by mistake. But you should remember that a first-time user is only a first-time user once — and after our user has

got the hang of the program, he or she may want to settle off half a dozen keys and then take a mouthful of coffee while the program catches up.

Research into factory working procedures has shown that machine operators are much happier if they can work at their own pace, rather than being tied rigidly to the machine's timetable.

Being able to average 12 pieces per minute is much easier than having to do one every five seconds, even though it may build down to the same thing in the course of a shift.

#### HELP screens

The information normally given on the screen should be enough for a reasonably experienced operator to use the program without any trouble. But there will always be inexperienced users and anyhow, from time to time somebody comes to a part of the program which is used only once in a blue moon.

So we need to be able to give people an extra hand. There is always the operator's manual, of course, but that is locked up in the blue filing cabinet and only Maise has the key and she's off sick again.

So what can we do? Press 'H' for Help and hope that the program was written by a decent programmer. A proper help facility should tell the user in some depth what options are available at that point in the program — what exactly they are, what they do, and so on.

The information would really have to be held on disk or on ROM, as loading 20KB or so of text from cassette would take rather a long time, so I suppose I'll have to relent for programmers running tape systems on a 3.5KB Vtc.

#### Menus

A large part of the operation of any program typically consists of telling the program what to do next — 'Print a list of all customer names and addresses', 'Enter today's invoice' and so on. These simple 'key' options are best handled by means of a 'menu' such as the one on page 87.

**Attention all Commodore 64  
owners with a  
1541 disk drive**

## MPS TOOLKIT

- \* **Single-drive 2-Pass Disk Backup** – or individual tracks
  - \* **File Copy** – transfer any number of files at once, up to 232 blocks long
  - \* **Disk Error Locator** – also checks for proper header, DOS, ID's & catalog, with printer option
  - \* **Disk Error Maker** – makes 20, 21, 22 & 23 errors, necessary for proper backup of protected disks
  - \* **Disk Drive Monitor** – address the drive's internal ROM & RAM
  - \* **Disk Doctor** – dozens of uses, read and change sectors, recover lost data
  - \* **DOS Changer** – Protect your own disks
  - \* **Disk Log** – displays all files on a disk, including start & end address, beginning track and sector, with printer option
  - \* **Loading Address Relocator**      \* **Disk Test**
  - \* **File Recovery**      \* **Compactor**
  - \* **Plus many more useful features!**
- Beware of imitations! **MPS TQDLKIT** is the only disk utility for sale in the UK which includes all this at such a low price. Comes complete with instructions is easy to use

ONLY-£13.95 including P&P

Foreign orders, please add £1.00.

Send cheque or P.O. to:

MPS SOFTWARE  
36 ALEXANDRA GROVE, LONDON N4 2LF  
Telephone: 01-800 3592

# ZOOMSOFT

## Commodore Software Specialists

[illegible]

100's more titles available. Send S.A.E. for free catalogue. Send cheques, P.O. to:

Zoomsoft,  
46 Huntsworth Mews, London NW1 6DB,  
Telephone: 01-723 0562.

**NOW  
3RD  
GREAT  
YEAR!**

# HIRE

**SPECTRUM  
ZX81 and  
COMMODORE 64  
TAPES**

**LIFE**  
MEMBERSHIP  
£5.00  
ARE FREE FROM  
**50P**  
INCLUDING VAT

OVER  
4,000

**HUGE RANGE!**  
ADVENTURE  
GAMES  
ARCADE and  
SIMULATION GAMES  
BUSINESS  
and PRACTICAL  
PROGRAMS  
UTILITIES  
M/C COMPILERS  
EDUCATIONAL  
FROM OVER  
50 TOP SUPPLIERS

**FREE**  
ILLUSTRATED  
QUARTERLY  
MAGAZINE WITH  
TIPS, NEWS,  
REVIEWS  
DISCOUNT OFFERS

**SPECIAL OFFER!**  
YOUR FIRST TWO  
TAPES **FREE**

IF YOU JOIN FROM THIS MAGAZINE, WE'LL SEND YOU A FREE INFORMATIONAL KIT. Call 1-800-451-7233 or write to: ALEC, P.O. Box 1000, Springfield, MA 01103.

[illegible]

To SOFTWARE LIBRARY Farnham Road, West Liss Hants GU33 6JU  
NAME \_\_\_\_\_ Machine \_\_\_\_\_

NAME	Address	Machine	...
...	...	...	...

**THE ORIGINAL** Special offer from this issue. LIFE MEMBERSHIP 25

**THE ORIGINAL SOFTWARE LIBRARY**

**Special offer from this issue. LIFE MEMBERSHIP**  
(normally £9.50) Overseas (airage only) £16 or  
join local branch in W. Germany, France, Holland,  
Belgium, Scandinavia, South Africa, Ireland - send  
in Reply Coupon and we'll forward your society.

**CRASH-OUT** problems?  
Add a **RESET** facility.

The **STAGE** and **RESET** buttons and **CASSETTE** will remove your MUSIC 11 MID code program without any loss.

- **RESET BUTTON:**
  - **RESET** button is available
  - **Single** and **double** button
  - **Low** and **high** impedance
  - **Low** and **high** impedance

#### ACC. MONITORING SOFTWARE

- 100% of all data captured in real time
- 100% accuracy
- 100% compliance
- 100% security

Send cheque or A/c with address to:  
Mum's R. Info Ltr.,  
Box No. 11, 5 Congdon Street,  
Ayr, Ayrshire, G8 1 2L.

## SELECT ONE OF THE FOLLOWING OPTIONS:

1. UPDATE CUSTOMER FILE.
2. ENTER INVOICES AND CREDIT NOTES.
3. PRINT LIST OF ALL CUSTOMERS.
4. PRINT ADDRESS LABELS.
5. PRINT CUSTOMER STATEMENTS.
6. PRODUCE AGED DEBTORS LIST.
7. FINISH PROCESSING.

PRESS 1-7

An Aged Debtors List, by the way is not a list for OAPs who don't pay their bills. It's a list of all customers who owe money. It is usually arranged in columns — "1 month", "2 months", "3 months" — so that the accounts department can see who the bad payers are.

When the menu is on the screen the operator has to press only one key in the range 1 to 7 to move on to the next job — using the numeric keys means that the operator does not have to search the keyboard for the "D" key. There are cases when we might use letters, especially "N" and "Y", but usually that only applies where we want the operator to stop and think (something you should normally try to discourage).

In a large program, there may be more options than will fit on to one screen. In this case we have to split the system up into a main menu and a sub-menu of sub-menus.

### Handling disk errors

People are very fond of knocking CP/M's famously enigmatic disk error message "BDOS ERR ON A:". To some extent this is unjustified, after all, what else do you need to know apart from the fact that a disk error has occurred on drive A? Do you really want to know that it is a read verify error on track 15 sector 3?

What is unobjectionable though is the fact that the user is not given any chance to try again. You may have put an unformatted disk in the drive instead of the correct one, or you might have put it in upside down, or you could simply have forgotten to close the drive door.

Many programs suffer from a similar problem. "FILE NOT FOUND", they say, or "WRITE PROTECT ON", and they then just stop! After every disk error the operator should be told what has happened (but don't try to blind the user with science) and give the option of either retrying or abandoning the operation. For instance:

CUSTOMER FILE NOT FOUND  
ON DRIVE J.

PRESS (A) TO ABORT. OR < R  
TO RETRY >

The operator can now make a choice — whether to give in and press < A >, or put the right disk in the drive and press < R >. Notice that this is a case for using letters, we want the operator to think about what he or she is doing, and there is a danger from pressing the wrong one of two adjacent keys such as 'I' and 'Z'.

This is also a case for clearing the keyboard buffer. If the operator has started to enter data becoming used to an 'A' he is now going to be in trouble!

At this point some programmers will be starting to half a pint and say, "Well that can't be done in this program because at the point where the problem occurs, the program doesn't know which particular file access caused the error". Or some such feeble excuse.

If that is true, then programmers had better rewrite their programs — because they must be pretty awful! There is no excuse for not being able to recover from an error because of lack of information. All it needs is a decently-written program



### Output

The output from a program may be displayed either on the screen or the printer. The same considerations apply to both, so we'll assume that we are talking about printer output.

The pointcut should of course have a heading at the top of each page saying exactly what the printout is and when it was produced. For example we may have a program to print out data from our customer file. A page heading saying "CUSTOMER FILE PRINT" is all very well if the program is going to print out all the customers, but if we have a selective print, which prints out

only customers living in Reading who have expressed an interest in photocopies, then the page heading (or at least the report heading) should say so. Otherwise, somebody picking up the printout could assume that all your customers live in the Reading area!

The layout of the data is largely a matter of common sense. If it is arranged in column format, then column headings should be printed at the top of each page. Numerical data arranged in columns should be formatted so that each figure has the same number of decimal places, and the decimal points should be aligned: (see over)

# Programming

**GOOD**  
0.25  
1034.00  
0.05  
— 1.40

**BAD**  
0.25  
1034  
.05  
— 1.4

The only other point worth mentioning specifically is that the report should be tailored to suit the person who is going to read it. If we have an automatic assembly machine turning out widgets, the production manager is going to want reports on product quality and quantity so that he can be sure that he is meeting his production targets.

If 20 per cent of his production is faulty, then he is going to have to get his maintenance staff to look into the problem.

The planning department on the other hand needs reports on the costs of running the machine — the cost of the raw materials used, cost of the electricity used, the maintenance costs, general staff and administration costs — as well as the production figures. They can now assess the total cost of producing a widget and so set the selling price.

But although the planning department wants to know the production data, the production manager shouldn't get a report cluttered up with various cost figures.

## Summing up

A quick summary of the most



important points. Notice that many of them have reservations do this but don't do that. It is part of the skill of programming to get the "this" right without falling foul of the "that".

1. Make life as easy for the operator as possible. Don't assume that he is as good a typist as you, or knows as much as you.
2. Give the operator as many options as possible, so that he can make his own mind up about how he does his job, but don't offer unnecessary information which could confuse him.
3. Let the operator know that the machine is still working. Certainly never leave him with the dreaded blank screen.
4. Validate all input immediately and tell the operator straight away if he has made a mistake.
5. Make the program as easy to use for a first-time user but, even more important, don't hold up an experienced operator.
6. Don't force the operator to enter information which you could calculate yourself. It is possible to try to work out defaults for data fields (possibly based on earlier input) so that the operator can just press <RETURN> to accept them if they are correct. New go to it and right some "good" programs!

**Superbase 96**

THE COMPLETE INFORMATION STORAGE AND CONTROL SYSTEM. SUPERBASE 96 TRANSFORMS COMPLEX DATA INTO A FULL-STRUCTURED, PROFESSIONAL DATABASE SYSTEM WITH UP TO 1,024 CHARACTERS PER RECORD ON UP TO 8 SCREENS... AND UP TO 128 ON-TAPE... 30 FILES OF UP TO 100 CHARACTERS EACH. CREATING, DELETING, MODIFYING AND CALCULATING RECORDS. MULTIPLE CRITERIA SORT AND SEARCH. EASY INPUT FROM WORDPROCESSOR FILES. BOTH MENU-DRIVEN AND PROGRAM-DRIVEN. DATA AND TRANSFER TO OTHER PROGRAMS. SUPERBASE 96 IS ESSENTIAL IF YOU WANT THE BEST FROM YOUR COMMODORE 64. SUPPLIED ON 5 DISKETTES ONLY, WITH EXCELLENT TUTORIAL PROGRAMS. OUR PRICE: £499.00. (VAT INCL.)

## Superscript II

SUPERSCRIPT II HAS ALL THE FEATURES YOU EXPECT FROM A PROFESSIONAL WORDPROCESSOR SYSTEM... AND THEN SOME! IMPROVED 240-COLUMN TEXT HANDLING. VARIABLE WIDTH SPACING. 10-DAY ROLLING OVER 2550 LINES. INDEPENDENT LINES OF UNLIMITED LENGTH. GLOBAL SEARCH AND REPLACE. FULL-MATHS CALCULATOR. ROW AND COLUMN PRINTING. BACKGROUND PRINTING AND COMPLETE REFERENCING. PRINT CONTROL. PAGE SUMMARIES. THE LATEST FROM CALCO SOFTWARE. THE COME BACK TO IT SPECIAL. 100% SUPPLIED ON 5 DISKETTES ONLY. OUR PRICE: £499.00. (VAT INCL.)

## Master

THE COMPLETE PERSONAL DEVELOPMENT PROGRAM FOR THE COMMODORE 64/128. GUIDED BY BUILT-IN VOICES AND PROFESSIONAL PROGRAMMERS, MASTER 96 IS THE EASIEST TO USE! INCLUDING 120-WORD MANAGEMENT, PROGRAMMER'S TOOLKIT, BUSINESS BRIEF, REF ID CARD ACCESS, MULTIPLE SCREENING, 10-DAY ROLLING OVER 2550 LINES. INDEPENDENT LINES OF UNLIMITED LENGTH. GLOBAL SEARCH AND REPLACE. FULL-MATHS CALCULATOR. ROW AND COLUMN PRINTING. BACKGROUND PRINTING AND COMPLETE REFERENCING. PRINT CONTROL. PAGE SUMMARIES. THE LATEST FROM CALCO SOFTWARE. THE COME BACK TO IT SPECIAL. 100% SUPPLIED ON 5 DISKETTES ONLY. OUR PRICE: £499.00. (VAT INCL.)

\*\*\* WANT IT NOW? \*\*\* CALL US TODAY! \*\*\* ON 01-546-7256

WIDE TO RUN (UPON)	£249.00	£297.50	SLIP/FORM/FILE	£699.00	£699.00	£699.00
PRINT BY POST OR PHONE	£149.00	£149.00	SLIP/FORM/FILE	£699.00	£699.00	£699.00
100% SUPPLIED ON 5 DISKETTES ONLY	£249.00	£297.50	SLIP/FORM/FILE	£699.00	£699.00	£699.00
100% SUPPLIED ON 5 DISKETTES ONLY	£249.00	£297.50	SLIP/FORM/FILE	£699.00	£699.00	£699.00

PRICES INCLUDE 10% VAT AND ARE CORRECT ON GOING TO PRESS. OFFER BY POST OR PHONE. DELIVERY BY POST OR PHONE. OFFICIAL COPY, 10% DISCOUNT IS AT LOWEST 10% DISCOUNT. PAID ORDER PRICE. PRODUCT DATA AVAILABLE ON REQUEST. NET 429



**Calco Software**

100% SUPPLIED ON 5 DISKETTES ONLY. OUR PRICE: £499.00. (VAT INCL.)

## SERIOUS 64 SOFTWARE

Dr. Watson Basic Course (Honeyfold) 1	£10.50
Dr. Watson Assembly Book (Honeyfold) 1	£12.50
Assembler Development Pack (Commodore) d	£28.95
Mastercode Assembler (Sunshine) 1	£14.95
MON64 (Handic) 2	£37.95
Programmers Utilities (Commodore) d	£14.95
Programmers Ref Guide (Commodore) Book	£24.95
LOGO (Commodore) d	£49.95
CPM (Commodore) r & d	£49.95
Simons Basic (Commodore) 1	£44.95
Petsped 64 Basic Compiler (Commodore) d	£44.95
Ultimath 64 (Composlive) 1	£14.95
Calc Result Easy (Handic) 1	£68.95
Calc Result Advanced (Handic) 2 & d	£95.00
Superbase 64 (Precision) d	£89.95
Magpie (Audiogame) d & r	£89.95
DFM Database & Labels (Dialog) 1d	£30.00
Transact. Book keeping (Dialog) 1d	£30.00
Investor. Invoice & Statements (Dialog) 1d	£30.00
Cashbook & VAT Accounts (Gems) 1d	£59.95/£4.95
Final Accounts (Gems) 1d	£59.95/£4.95

t = Tape d = Disk r = Cartridge  
(Send a SAE for a list of our full range)

## PLUS - THE PRICE YOU SEE IS ALL YOU PAY

- \* FREEPOST (no stamp needed) for ordering
- \* FREE postage, packaging and insurance
- \* 14 Day MONEY BACK guarantee

ACT NOW, by sending cheque or postal order to -

**64 PLUS** FREEPOST, BLECHLEY, MILTON KEYNES, MK1 7TF



## BUSINESS SOFTWARE

for  
**Commodore 8032/8096  
and 64**

### PAYROLL

**£99.50 + VAT**

Hourly, weekly and monthly basic, 7 rates for overtime or piecework, four pre-tax adjustments, including pension contributions and S.S.P. seven after tax adjustments, N.I. and all tax codes for use with printed payslips or plain paper. This payroll can be adjusted by the user when tax rates change.

### INTEGRATED ACCOUNTS FROM £299.50 + VAT

Purchase ledger with aged creditors, sales ledger with invoicing on forms to the user's own design, statements, aged debtors, etc, day books, V.A.T. analysis, stock control, automatic posting to the nominal ledger with manual override, nominal journals, trial balance, complete audit trail, management reports, profit and loss and balance sheet. Able to read payroll files.

Write or phone for details and complete software list to.

## ELECTRONIC AIDS (TEWKESBURY) LTD

12 Drysdale Close, Wickhamford  
Evesham, Worcestershire WR11 6RZ  
Telephone: (0386) 831020

**Anger**  
Productions

**CBM 64  
Software**



**FLIGHT SIMULATOR** - Personal flight simulator for the Commodore 64. Includes 100+ aircraft, 100+ locations, 100+ weather conditions. **Cassette game £9.95p**



**TENNIS** - Play tennis on the Commodore 64. Includes 100+ courts, 100+ opponents. **Cassette game £7.50p**



**PLAY GOLF** - Play golf on the Commodore 64. Includes 100+ courses, 100+ opponents. **Cassette game £2.50p**



**DISCOVER YOUR IQ** - Test your intelligence on the Commodore 64. Includes 100+ questions. **Cassette game £3.45p**



Order any 2 games and receive our excellent

**ASSEMBLER FREE worth £6.95p**

Help yourself to learn how to write, read and repair your own machine code programs

### LIFETIME REPLACEMENT GUARANTEE

Order just one game, the change is added free to us with your remittance.

Name	Flight	£9.95 L
Address	Golf	£2.50 C
	Tennis	£7.50 C
	Assembler	£6.95 C
	IQ	£3.45 C

Any combination of programs available on Disk £4 extra  
ANGER PRODUCTIONS 14 The Quadrant, Weymouth, Dorset DT99 1JH

## Why buy two when one will do?

The **INFRASCOPE COMMUNICATOR II** is an electronic typewriter AND a computer printer

## ALL IN ONE

- ★ RS232 Compatible KSR and Parallel RO Interface
- ★ Approved Interface for the SCM 1100 Typewriter
- ★ Interface cables available for BBC/B, Commodore 64, Sinclair QL, Spectrum, or virtually any other micro computer with an RS232 or Centronics interface
- ★ Choice of 2 or 8K character buffer

**ALL THIS FOR ONLY £45B**

**Incl. VAT & Delivery**

**(Interface Cable Extra)**

**VISA/ACCESS accepted**

The new **KSR COMMUNICATOR II** is now available for immediate despatch. Using the popular Smith Corona EC 1100 typewriter we have created a high quality computer printer by fitting our new **INFRASCOPE** Interface.

But don't take our word for it, write or phone for our free comprehensive data sheet

**INFRASCOPE LIMITED**

Longbeck Road, Marske, REDCAR, Cleveland TS11 6HQ.

Telephone 0642 470121



# STACK



## NEWS SPOT

List of new products, prices, improvements. Don't miss fantastic light pen drawings, price of joystick and auto fire controller.

## STACK XMAS OFFERS

### MAIL THIS COUPON NOW!!

To **Stack Computer Services Ltd., FREEPOST, Bootle, Merseyside L20 0AB.**

Yes, I am interested in:

- ☐ All the time  
☐ IBM and Address  
☐ BBUS  
☐ Drag  
☐ All

All prices include VAT  
Add p & p £1.40 free **£25.00**

# THE BIGGEST RANGE YET COMPUTER PRODUCTS

At Last!!

A truly professional design standard light pen drawing package. You really can draw accurate detail drawings quickly and easily using this superb 100% machine code software supported by an extensive and helpful manual. Built in architectural and electrical symbols with facilities to add an unlimited number of your own symbols eg. musical, mathematical etc with others to come soon from Stack. Printing routines are included for CBM and Epson printers and custom drivers can be added. For fun, ten games for the pen are included in the pack together with two sample pictures. All supplied on two double sided tapes with instructions for transfer to disk operation. You really must see this to appreciate just how good it is.

## RETAIL PRICE LIST

File	19.95	Victor 4	
Pen	28.00	Comprehensive 1st Res. System	
Centronics	24.00	Cartridge	26.45
Certificates & disk	29.99	Victor 4	
PS 256	33.00	High Speed Casewriter/MC	
Disk based compiler	9.95	Monitor Cartridge	26.45
886 488	30.00	Victor 5	
Help Card	15.00	For use with Victor 4 - provides	
Super Help Card	25.00	Assembler facilities on Vic	
Arrow Card	16.00	Cartridge	26.45
Amc & Plus Card	24.00	Ram & Rom Camer	9.20
10 x C12 cards	5.00	12IN Dust Cover	1.75
Am slugue joystick	15.00	vic 20/64 Dust Cover	2.00
Zap Proof joystick	7.95	1541 Dust Cover	1.83
Auto Fire Adaptor	3.35	1525 Dust Cover	3.35
Unit 2		1540 Dust Cover	2.35
(Programmer's Auto/Res			
Commands) Cartridge	32.20	Full range of Leads, Connectors, Dust Covers etc. Ex Stack at Very Competitive Prices	



## Light Pen CBM 64 or Vic 20\*

Absolutely the best - see opposite-100% fast machine code Featuring - Freehand draw, Nib size, Circle, Box, Fill, Line, Text, Zoom, Animation, Put, Get, Save, Load, Print, Lock X, Lock Y and 10 Games

Supplied on tape - transferable to disk

**£28.00**

## Stack Light Rifle



**£19.95**

A unique game system for Vic 20 or CBM 64. Load one of the three games included and shoot the cowboys, rats, convicts etc on your T.V. from up to 10ft away. Complete full colour and sound effects.

## CBM 64 Compiler

Turns your normal basic programs into very fast machine language like code

**Disk based £9.95**



## 4 SLOT Motherboard VIC 20 & CBM 64

A high quality switchable expansion unit with gold slots enabling up to 4 compatible cartridges or RAM packs to be simultaneously inserted and turned on or off at will

**£28.00**



## CENTRONICS INTERFACE VIC 20/CBM 64

A very high quality strengthened cable (not flimsy ribbon) together with easy to use driver software on cassette (disk £5 extra) compatible with EasyScript, Vizawrite, Simplywrite, Wordcraft and many others (but not all)

**£24.00**

## RS 232 C INTERFACE CBM 64/VIC 20

A full Bi-directional interface for Printer, Plotter or modem connection. Provides standard D type male connector compatible with any software which uses the serial port. Special cable service available if required. Full documentation

**£33.00**

## IEEE-488 VIC 20/ CBM 64

This cartridge provides the standard CBM connector and enables all 3000, 4000 and 8000 series disk drives and printers to work with the Vic 20 or CBM 64. Supports normal CBM 64 commands

**£30.00**



## ARROW C64

A 1 cartridge Giving  
\* 7 times as much cassette speed for loading and saving  
\* Max line Language Monitor  
\* High Speed Four pinning  
\* Hexcode (small) calculator

**£16.00**



## ARROW PLUS C64

All of the features of Arrow with the addition of Assembly and Disassembly for 64 bit

**£24.00**

## HELP C64

This cartridge - absolutely packed with terrific routines and features  
20 Additional Basic Commands, Pinning Disassembly, M. ntr. Dis. Operating System Support

all for **£15.00**

## SUPER HELP C64

This Cartridge includes all of the commands of Help with the addition of a Full Symbolic 2 Pass Assembler

at only **£25.00**

## AUTOFIRE ADAPTOR CBM 64/VIC 20

A unique between game joystick on 5 line controller and gives full analogue feedback. Now you can really 'zap'.

**£3.25**



## ZAP - PROOF JOYSTICK

Absolutely unbeatable, rubber foot, 2 line. Surface, good action quick/hold lock disk

**£7.95**



## STACK 100

EXTENSIVE INFORMATION CONTAINED

ON THE STACK 100

DISKETTE

FOR THE

COMPUTER PRODUCTS

COMMODORE 64 (Joystick Compatible)



"THE STAFF OF KARNATH" recommended retail price £9.95 inc VAT  
Available from WHLSMITHS, PO BOX 2, HENNES, TORQUHAY  
and all good software retail outlets. Also available from  
ULTIMATE PLAY THE GAME, The Green, Ashby-de-la-Zouch, Leicestershire LE19 5JF  
(VAT included) Tel: 0530 413345

# A STAB IN THE BACK FOR BASIC?

## An alternative language to Basic and machine code

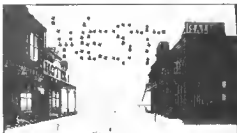
by Andrew Collin

STAB is a programming language originally developed at Strathclyde University. One of its offshoots, STAB-1, is a language specially written for small computers. It's not only portable but it provides the ease-of-use of Basic with the speed of machine-code. STAB enthusiast Andrew Collin, who recently set up Talent Computer Systems, introduces the language and explains why Talent is using it to write games and utilities for the Commodore 64. You can't acquire it, though, for your own 64 — but that could change if there were enough demand.

If you own a Commodore 64, you won't need to be told how hard it is to program. If you're writing a small, simple program, Basic will serve you well, but as soon as you start on anything complicated, or try to use the graphics and sound facilities on your machine, Basic just gives up. You're left with a mess of PEEKs, POKEs and machine code routines which take ages to get right; and even then your program won't run as fast as the professional stuff.

What's the secret? The wise old man of computing (actually they tend to be about seventeen, so let's say they're old in experience) will tell you that these programs are written in '100% machine code'. It's true that a machine code program knows no restrictions about what it can and can't do, and is a genuine way of getting the best performance from a computer, but have you ever tried writing a large program in machine code? There's so much potential for detail to worry about, and so many pitfalls for careless mistakes, that the whole process is a return to slavery. Computers are supposed to get rid of mindless drudgery, not create it!

The solution to this problem is obvious once it's pointed out. We need a high-level language (that is, one which allows expressions, variable names, subroutines, loop structures and so on) which also gives you full control of the computer and is capable of running as fast as machine code, and they would still run just as fast. Since you could now afford to throw away bad bits of program and rewrite them, your final product



PROGRAMMED BY ALAN BLACK AND JON MALONE  
GRAPHICS DESIGN BY MIKE MASTERS  
COPYRIGHT © TALENT COMPUTER SYSTEMS 1988

might even be better than if you had managed to write it in 100% machine code.

There are lots of computer languages around. The best known ones apart from Basic are Fortran, Cobol, Lisp, Pascal and Prolog. Unfortunately these languages were all designed to run on mainframe computers. They don't give you full control over the machine, and some of them run very slowly (even on mainframes). The choice for micros is much more restricted.

When Talent Computer Systems decided to enter the home computer software market, we faced this problem in acute form. We had lots of ideas for new products, but — like other software companies — we were a bit light on resources to turn them into finished products. Fortunately we had good connections with the Department of Computer Science at Strathclyde University, where they have been doing research on

programming methods for a number of years. One of their products is STAB 1, a computer language specially written for small machines. This language is portable, which means that you can easily run it on any computer you like.

### Looking at STAB

What is STAB-1 like? At first glance, it's quite similar to Pascal. You can call your variables anything you like, and the names have limited scope — which is the Computer Scientist's way of saying that the names only have any meaning over a restricted part of the program. This fact helps enormously with building large programs, because two or more modules can be stuck together without worrying about the fatal name clashes which so often arise if you try to do the same thing in Basic.

Another feature of STAB is that programs split naturally into pro-

cedures, each of which does one simple, well-defined job. The procedures talk to each other through a system of arguments or parameters, a bit like the user-defined functions in Basic. The key difference is that in STAB the procedures aren't limited to one line but can be as long as you like. A procedure can call another procedure. It can even call itself, which lets you use recursion.

Also, STAB is especially well adapted to handling peripherals. The way it does this is very simple. One of the 'data types' in STAB is called CHARVEC. That's not complicated, it's just like an array in Basic, except that each element is a character (or a byte) rather than a number. There's no limit to the length of a charvec, and it's quite easy to declare a charvec which covers the whole address space of the Commodore 64. You can then refer to any peripheral register just by using the right subscript.

### Procedures with STAB

To give an example, consider the following section of code, which copies some character definitions into the RAM at address 32286. The Basic instructions are taken from the Commodore 64 Programmer's Reference Guide, page 110:

```
30 POKE 56334, PEEK(56334)
AND 254
30 POKE I, PEEK(I) AND 251
40 FOR I=0 TO 511: POKE I+
12289, PEEK(I)+52248: NEXT
50 POKE I, PEEK(I) OR 4
60 POKE 36334, PEEK(56334)
OR I
```

The corresponding bit of STAB-1 might be:

```
routine copychar charvec source charvec destination
let lpr=-.56234
( memlpr and .254-> memlpr
 meml and .251-> meml
 do 1=0(1.511 memlsource+1)-> memldestination + 1)
 memlpr or 4 -> meml
 memlpr l -> memlpr
```

This is an example of a procedure. It might help to understand it if we mentioned that decimal numbers are preceded with a full stop, numbers are assumed to be in the scale of 8). The shorthand is a subscript operator so that meml means roughly the same as MEM(Q) in Basic. Finally, -> means "assign". Assignment statements are written the logically correct way—work out the expression on the left, and then put it into the address on the right. Most people would say that STAB as arguments are written backwards, but then most people have been brought up on illogical languages!

The procedure does nothing by itself. When called, it will move 512 characters between any two places as defined by the parameter source and destination. If you actually want the text entered to be copied from 53248 to 12288, you would write a routine call like copychar, 53248, 12288).

The second way that STAB helps you control the machine is the provision for handling interrupts. You can write your program to include a special routine or network of routines; and you can arrange for that routine to be called automatically every time an interrupt occurs—for any reason. There is no need to write any machine code at all!

To give you a little more of the flavour of the language, here's a complete program to calculate and print prime numbers, using the method of Eratosthenes' sieve:

```
† Prime numbers by Eratosthenes' sieve
charvec s(.5000)
routine pr X † Display value of x
if x > 0 then (pr/x;.10)/prutch(x rem .10+1)
routine main
let jk
12-> jk
while j < .2500 repeat {
  if s[j] = 0 then
    2*j-> jk
    while k < .5000 repeat { j-> s[k]; k+1-> k }
  j+1-> j
}
† Now print out numbers where the elements of the
  sieve are still 0
do 1=0(1.4399 {
  if s[j] = 0 then (pr[j]; printch(" "))
}
}
main
```

So far we've tried to convince you that STAB is a better language for writing large programs than Basic. The trouble is, you'd need a large example to prove the point! It's worth mentioning that all of Talent's products are written in STAB, and they tend to be between 1500 and 2500 lines long. Most lines contain more than one command.

## Running speed

What about speed of execution? The most elegant and sophisticated language is useless if the programs just crawl along. To explain how STAB programs manage to run so quickly, I'd like to begin by reminding you of the difference between interpretation and compilation.

The Basic which comes with your Commodore 64 is interpretive. This means that as you type in your program, it's put away in the memory character by character, with only a few concessions to space like abbreviated keywords. When you finally say RUN, the computer obeys your program statement by statement. In every case it begins by analysing the command, working out what it means and making sure that there are no errors. Only when the meaning is clear does the computer actually obey the command by adding numbers, displaying a string or whatever it may be.

Despite the snail's pace, interpretation has huge advantages for

developing and testing programs. The original program is always in the machine, and you can list it and change it whenever you like. Another advantage is that programs in Basic tend to be compact, so that not much memory space is given over to storing them.

On the other hand, these benefits don't come free. The interpreter has to analyse every statement every time it is obeyed, so that in the loop:

```
10 FOR Q=1 TO 1000
20 A=A+1/Q
```

30 NEXT Q

the command at line 20 is not only obeyed 1000 times, it's also analysed 1000 times; and of course the results of the analysis are the same each time round. This makes interpretation very slow, and the computer creeps along at about 1 per cent of its true potential speed.

The alternative to interpretation is compilation. Here the program is analysed once and for all, and translated into assembly code before it runs. The major advantage is that it will now run at a speed much nearer to that of machine code (not full machine code because computer based translators — compilers as they are called — are not as clever as human coders).

The corresponding disadvantages are many. First, the translated version tends to be bulkier, to take up more memory space than the original version of the program. Second, the compiler is a complicated program, and it is difficult to shoe-horn it into a computer like the 64 (it can be done, but it would run rather slowly). Third, program development isn't so easy because the whole program has to be retranslated if any of it is changed.

## Compile or interpret?

Which is best, interpretation or compilation? There is no simple

answer. Clearly, some parts of the program you are writing have to run as fast as possible to keep up with the outside world. Other parts, such as those which display screens or writing or accept typed input, have no special requirements for speed. It takes a normal person several seconds to read a screen, so it doesn't matter whether the screen appears in 1/1000 or 1/10 of a second.

STAB-1 lets you mix interpretation and compilation in the same program. When you write your program, you can choose the procedure to be translated into machine code so that they run fast. The others are interpreted and run more slowly, but then they take up hardly any room in the memory.

Would you like to get a STAB-1 compiler/interpreter for your Commodore 64? I'm afraid you can't, unless you've got a WICAT microcomputer. The STAB compiler has never actually been transferred to the 64. Instead, Talent does all its program development on the WICAT, a powerful machine with 256K of memory and a 68000 microprocessor — not the kind of machine you keep in your living room.

Programs are written and tested on the WICAT. At a later stage, they are sent down communication lines for final testing in the 64 itself or any other home computer.

Let's summarise. STAB-1 lets you write large programs which run fast and give you easy control over the hardware of the machine. Furthermore, STAB programs can be tuned so as to get the best trade-off between space and speed, and it is easy to get the same program running on several different microcs. It all sounds pretty useful. As we said earlier, STAB is not available to people who have only the Commodore 64. But this could change if there were enough demand!



## For High End C64 Users

Introductory Offer

# ONLY £69.95

Limited to orders received between now and January 31, 1985

- Print your letters with professional quality and speed
- See your program listings printed as you wrote them
- Get a 70 second screen dump in HiRes
- Print multicolor in grey shades
- For Epson, Star and other 8 dot matrix printers

### Multi Function C 64/SX 64 Printer Interface

#### Name

MF 64

#### Manufacturer

ARMON Electronics Ltd  
Unit 105, 110, 111  
5, Kingsway, London W2  
9L, Germany  
0049 21 71 106 76

#### Price

Interface and Print unit  
£59.95 + £1.75 P&P  
£61.70 + £1.75 P&P

#### Dimensions

8 1/2 x 6 1/2 x 10 1/2 in (214 x 165 x 267 mm)

#### Features

• Epson FX 80, Star Gemini 10 A or most other variety

#### Memory

8k buffer, external as line of order 16k (max 110 & 115) - £24.95  
Note: MF 64 printer or printer interface (not in scope of this offer)

#### Interfaces

C 64 and other  
8-bit parallel, Centronics

#### Power requirements

100-240V, 50/60Hz, 100W  
Printer's indicator

#### Features

- Cash, alphanumeric address
- Lower case, case, graphic symbols, normal and overline
- Commodore graphics characters, normal and inverted
- Program listing shows control character without escape
- Program listing made better with right margin for printer control
- Auto repeat, any of the above screen except 1 line can be turned off or on - may be slow variation of screen from character to the next
- 3rd handling shows each copy of screen (line to 1st)
- Hi-Res hardcopy dump screen picture in four possible sizes each "zoomed" or "reduced" to about 70 seconds
- Multi color, screen is divided in different grey shades (40 pixels) each color by default or 40 grey levels
- Headlines in 10 lines of 15 lines each
- Diskette contains interactive reproducible terminal software in 40 lines. Printer with sample terminal and programs for loading and printing graphics. Screen also in main unit
- 4 of 80 characters readily available on top cover of housing

#### Auxiliary

At £2.95 and £3.95, just with the following application in programming: MPES interface, multi color graphics, screen dump of text and 110 lines graphics, free copies of program listings, computer, 100-240V, 50/60Hz, 100W

#### Terms

Cash/Net bank checks, 40% or Master card. Sales card number with opening card and 2nd card to order in Europe. Add 3% for Europe. 6% elsewhere for shipping and handling

## Turn your COMMODORE Plus/4 into a comprehensive business system with COMPANY PAC 1+2+3\*

The complete business accounting system that's simplicity itself to use. Think how it could help you in your business.

Just **£98.95** + VAT

### PURCHASE LEDGER

- List Overdue Unpaid Invoices
- Payments & Credits
- Supplier Details/Reports
- Up to 550 Accounts

### SALES LEDGER

- List Overdue Unpaid Invoices
- Customer Details/Reports
- Payment Credits/Debits
- Up to 550 Accounts per client

### INVOICING

- Print Invoice Credit Note
- Multi VAT Facility
- Multi Form Facility
- Invoice Layout program

### STOCK CONTROL

- Low Stock Re-Order Report
- Part Numbers/Locations
- Percent Profit Report
- Full Supplier Details

### NOMINAL LEDGER

Profit & Loss Account • Balance Sheet • Help Menu • Total Balance

Company PAC 1, 2 & 3. The complete suite of business programs specially developed to make your Commodore Plus/4 the "total email business menu". For just £113.80 (incl Post & Packing & VAT) you could simply and speedily up your routine paperwork as have hundreds of finished units. Ring 01 920 0099 how quoting your Access/Visa number or send your order to the address below. Dealer enquiries welcome.

### IMPEX SOFTWARE LTD.

Merit House, Second Way, Wembley, Middlesex HA9 0TY

## 3 NEW CBM 64 GAMES

from  
bubble bus

**Jazz** fast action shooting

**CAVE FIGHTER** jump, climb and shoot

**STRIKE FORCE** 3D war game

Available from all good retail outlets or direct from:  
Bubble Bus Software, 87 High Street, Romford, Kent RM1 1BE  
Telephone 0724 255962 Telex 95151

## MusiCalc

Specialist for Cards  
01 264 1234  
Devises 01 264 1234

MUSICALC 1 Synthesizer & Sequencer	£49.99
MUSICALC 2 Scorewriter (Requires CBM 1503 or Epson Printer)	£34.99
MUSICALC 3 Keyboard maker	£34.99
Template 1 (Latin)	£19.99
Template 2 (Rock)	£19.99
Beat Fun (Drums)	£19.99
SPECIAL all the above	£160
SPECIAL/ MUSICALC 1, 2 and 3	£110
MUSICALC demo disk [refundable]	£6
MUSICALC demo tape (audio) [refundable]	£3

### TOTALS

prices include VAT and UK P&P. Add overseas postage of £1.00 per item

### TOTAL ENCLOSED

Mail your order with your payment to:  
MusiCalc UK, The Metropolitan, Enfield Road, London N1 5AZ

NAME: .....

ADDRESS: .....

☐ Tick here if you'd like to go on our mailing list for future MusiCalc announcements

# Forth

## The Forth Dimension: Programming with a DIY Language

### Part 4 — all about structures

by Richard G Hunt

In the previous articles in this series I have discussed briefly one of Forth's most useful structural words [DO...LOOP]. Together with [IF...ELSE...THEN] and [BEGIN] these words are the cement that binds the building blocks to provide style and form. Without them, to extend the metaphor, Forth is a house of straw!

Structure is important in any language, not least Forth. Structured programming — simplistically a buzz phrase for thinking it out and getting it right first time — is imposed on the Forth programmer by the language. There are three very elementary rules of structured programming:

- Each operation is sequential.
- Conditional operations allow branching according to the state of conditional flags — execution of xxx where condition is true. yyy if false, and zzz after xxx or yyy.
- Repetitive operations execute xxx continually until, or while a condition yyy is true, when execution proceeds to zzz.

Rule 1 is supported by any system. Rules 2 and 3 depend on available structural commands in the programming language. This is how they apply to Forth.

#### IF...ELSE...THEN

The full syntax of the Forth conditional is (Condition) IF (execute true words) ELSE (execute false words) THEN (continue). As with most languages the ELSE part is optional. It is of course the stack that causes the order of the components. A value for comparison must be on the stack first for comparison to take place. Consider the following:

```
:GETANS "DO YOU WANT
  ANOTHER GAME?
  (Y/N)
  KEY 83-IF
  STARTPROC ELSE
  QUIT THEN;
```

The word expects ASCII 89 ("Y") to be pressed in order to call the

word that runs the game, otherwise QUIT is called which returns control to the keyboard. Note that any value other than "Y" ends the game, thus capturing wrong keystrokes. The dyadic (that means a set of two) relational operator '=' takes two values from the stack and leaves a flag which is [1] if the condition is true or [0] if false. IF takes the flag and causes branching to the appropriate code depending on which flag is present. It follows that IF can be used only within a colon definition. (This applies equally to DO and BEGIN below.) The IF structure is a frequent and powerful statement. It is possible to nest IFs like this:

```
:MENU (input from keyboard)
  1 = if prog1 else
  2 = if prog2 else
  3 = if prog3 else
  4 = if prog4 else
  5 = if prog5 else quit
  then
  then
  then
  then
  then;
```

This is possibly not as neat as a CASE structure (as in Pascal) but if you are that concerned, Forth supports other relational operators which work similarly:

```
[<] less than [>] greater than
[=] and [0<] both compare with 0
```

Other operators seemingly missing must be defined:

```
:NOT 0= (reverses truth of flag)
< > = not;
< = > not;
> < not;
> 0 > not;
```

#### The DO...LOOP

This is perhaps the most common of Forth's repetitive structures. I have hinted at how it works in earlier articles and since example is an excellent teacher, here are some ways to use DO...LOOP:

```
:TEST 0 1 do 1 do 1 1 * 3 .
loop cr loop;
:2TEST 0 1 1 do 1 1 do 1 1 * 4 .
loop cr loop;
:3TEST 0 1 1 do 1 1 do 1 1 * 4 .
loop cr loop;
:4TEST 0 1 1 do 1 1 do 1 1 * 4 .
loop cr loop;
```

These are examples of how to create vectors and matrices in a very simplified way. It cannot compare with the conciseness of more advanced languages but with care it can cater for most normal requirements. And few would deny that it's also much more readable! The loop limits need be suitable for the Vic's 22-column screen and may be made larger for the 64. Try to walk out what each example does before you enter it, remembering that I catches the loop counter from the top of the return stack, and J the next inner loop counter from the second position on the return stack. Finally on DO loops, it is possible to force a premature end by using LEAVE, once a given condition is filled.

#### The BEGIN structure

This structure has several possible forms which allow great flexibility:

- BEGIN (execute Forth words true condition) UNTIL (continue)
- BEGIN (true condition) WHILE (execute Forth words) REPEAT

#### • BEGIN (execute Forth words) AGAIN

The first option allows the choice of determining branches out of a loop at a given circumstance, that is when a specific condition becomes true. In a game, a BEGIN loop may determine the continuous running of the program at the highest level:

```
:RUN BEGIN PLAY DEAD
UNTIL;
```

PLAY would invoke all the lower level words that make the game, while DEAD would keep track of the score or number of lives used and so on. Now try this example. You'll see that TERMINAL tests for the RUN/STOP key:

```
:TEST BEGIN "HELLO"
?TERMINAL UNTIL;
```

The second option allows the reverse condition to be determined. In this case the loop repeats (or REPEAT) as long as the condition remains true, or conversely when the condition becomes false. As a theoretical example this form could be used to count loops and repeat while, say, the count were less than a given number.

```
:TEST BEGIN ?TERMINAL
NOT WHILE "HELLO"
REPEAT;
```

The last option permits continuous looping unless the word QUIT or ABORT are met. Try using this:

```
:?TEST BEGIN "HELLO"
?TERMINAL IF QUIT THEN
AGAIN;
```

The next article will cover mostly input of numbers and strings and will conclude with a little exercise to practise what I have preached these last few months.



# Learning to Cope

Learning To Cope is an annual publication compiled by journalists on Educational Computing with five years' experience in the field of education and high technology. The third issue of Learning To Cope deals with all aspects of computers in special education.

This issue gives information on the latest developments in hardware and special aids designed and adapted for physically and mentally handicapped children and adults. The progress made with micro-electronic devices helps create independence for all who use them.



A large proportion of Learning To Cope is dedicated to software, with a catalogue listing all the specially designed programs for children and adults with specific needs. It also includes a comprehensive software reviews section which examines how programs can be used as teaching and learning aids across a wide range of subjects. Computer applications are illustrated through case studies covering such topics as computing and the handicapped children.

Learning To Cope is the only publication which deals in depth with computers in special education. It offers practical advice and guidance as well as pages of useful information and contacts. It is something you cannot afford to miss if you are in all connected with the teaching of children and adults with special educational needs.

Please send me a copy of Learning To Cope - Computers in Special Education.

I enclose a cheque/postal order made payable to Educational Computing for £2 (including P & P). Discounts are available on bulk orders - contact the editorial office on 01-251 6222 ext. 2475.

Name \_\_\_\_\_

Position \_\_\_\_\_

Establishment \_\_\_\_\_

Address \_\_\_\_\_

Signed \_\_\_\_\_

Now please post to Learning To Cope, Priority Court, 36-32 Farringdon Lane, London EC1R 3AU.

# Surprise!



**COMPUTER  
& VIDEO  
GAMES**

There's a surprise in store in every issue of Computer & Video Games magazine. Every month you'll find great games listings for your computer, reviews of the latest software, The Top 30 Chart, The Bugs, Arcade Action, competitions and many more fun surprises. At your newsagent on the 16th of every month.



# Adventure INTO THE VALLEY

with John Ransley

Now that we've all broken into our piggy banks to buy our nearest and dearest even more spectacular Christmas presents than last year, ardent Adventurers will be keen to revive those flagging savings. What better than to solve an adventure and win a fortune into the bargain? You could win £25,000 by solving Eureka! or win a diamond by cracking the secret of Commodore's new Secret of the Stones

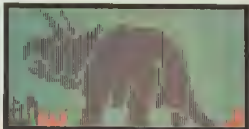
I have a suspicion that there are software snobs in just the same way as there are those cinema freaks who talk about film – and then, only if it can be viewed in a 20-seat art theatre and portrays black-and-white documentaries of the peasant struggle in nineteenth century Albania. (with Danish subtitles).

They are probably more numerous among adventure gamers, too. They're up until three in the morning waiting for just one turn at Mud and strongly hold the view that Philip Mitchell should be canonised (if such a thing is possible in the case of an Australian – let alone advisable).

They keep meticulous notes and maps, of all the adventures they play. To use HELP even once is to risk immediate excommunication from this elite elite.

And when it comes to buying new software, they're even more critical and cynical than the sub-teens I see scanning the racks in WH Smith on a Saturday morning. They are especially wary of the hyped title – much preferring the single-figure camaraderie of a game that only seven other people will ever buy. But are they always right to be posited in the face of puzzles?

Eureka! is a case in point. Wasn't there a danger that the clever feaser ads followed by enticing full-colour pages of clout and the promise of a £25,000 prize would be seen as a little too slick, a nuts too glossy, for the game itself to be



Eureka – good adventure or just good hype?

taken seriously? After all, there are always the headstones of Imagine and Rabbit to remind us of what happens when software advertising is consistently better than the products it promotes.

But in the case of Eureka! at least, any such suspicions must be quickly dispelled. Its pedigree helps. This 250K text and graphics skirmish with prehistoric Europe, Roman Italy, Celtic Britain, war-time Germany and the modern-day Caribbean is the work of Ian Livingston and the talented Hungarians in Andromeda's

to claim that £25,000.

Even so, the sample more than testifies to the quality and excellence of Eureka! Putting to one side the prospect of a glittering prize – because the game must surely be judged on its intrinsic merits – Eureka! is well-furnished with challenges which are sometimes encouragingly easy – at other times, very testing.

But responses are fast and logical, and so even if your progress is brought to an abrupt halt in the path of a runaway horse or in the hull of a sinking slave ship, you should be able to figure out where you went wrong and be back on the track (or lava path, or Appian Way, or wherever) fairly soon.

The graphics are a stroke of near-genius. Instead of using hi-res screens with text windows (with all the attendant limitations), the Andromeda team have used multicoloured and multi-layered sprites to create smaller but brilliantly coloured and highly-detailed pictures which can thus be stored, displayed and changed almost instantly.

Many incorporate animated elements to add extra interest. The overall enjoyment is heightened by full use of the 64's sound potential. The marvellously strident music in the Roman segment, for example, reminded me of those 1850s epics in which Victor Mature used to fight a lion with one hand and a gladiator with the

stable who brought such a refreshing look to games like Caesar The Cat.

Given that the prize element is obviously important, reviewers were provided, at most, with only two of the five sections which comprise the game – and I wouldn't be at all surprised if even these didn't vary in some subtle respects from the public versions. Also unavailable at the time was the colourful booklet containing additional riddles and illustrations and which offers more clues to discovering the phone number that you must be the first to ring

continued on page 100

other while saving most of his energy for Gna Lollobmgda. So Eureka! is that rare thing - a hugely-hyped game that actually does live up to the promises of its advertising.

## A spy from beyond

Those of us old enough to have been young enough (if you know what I mean) to be anarchic, even before the era of Monty Python, will greet with nostalgic delight the news that Anonima Prohias's duelling, wedge-nosed secret agents from the pages of *Mad* are to feature in *Spy vs Spy* from Beyond Software.

I had my wrists slapped by Beyond's Clive Bailey for daring to suggest that it might be categorised as an arcade adventure, it is an 'animated cartoon strategy game'... I think he said. And as with that other, well-known game of strategy, now can play, it should keep the joystick manufacturers happy anyway.

What do you do for an encore when one mega hit under your belt? You don't necessarily hit another vein of gold the second time around - as Melbourne House discovered after *The Hobbit*. Successors to that title have been adequate but hardly outstanding. Then again, you don't hack out that quality of program over a long weekend, and indeed it is almost wondrous that Philip Mitchell has polished off *Sherlock* as quickly as he has.

## Sherlock homes in

*Sherlock* is almost a pure text adventure, though there are some graphics along the way. The real appeal of the game is the intelligence of the parser routines, which build on the facility for third-person communication and inter-action first seen in *The Hobbit* to an extent that will impress even Zorkists. Incidentally, it used to be only Infocom who were any good at producing supporting documentation; indeed, the 18-page booklet that comes with *Sherlock* improves even on that standard.

By the way, don't make the mistakes (as a friend did) of putting to one side the timeables and other scraps which come with the game, thinking them to

be only amusing make-weights. If you're on the night lines (lmao hah!) you should find a use for them all.

Players of *Astec Tomb* from Aliquata can testify to the fact that this early effort by Tony Crowther gave little hint of his latent talents, which were to eventually surface in *Loco and Suicide Express*. Pretty brave of Aliquata, then, to use the title *Astec Tomb Revisited* (£7.95, £11.95 disk) for their latest adventure. Even more courageous, perhaps, of Mr Micro to promise a new graphic adventure every fortnight on Computist, coming soon. The games will be linked, and users will be able to download them onto disk from the Software Park pages. Meanwhile,

ing has legendary (?) propensity for a quick morier. It is offensively entertaining and almost compensates for the inadequacies of its bedfellow in this collection. Or you can buy it separately from Applications Software at £5.50.

The brace of new graphic adventures from Audiogenic at £5.95 are - if you'll pardon the extended metaphor - a bit of a curate's egg. In *Time Traveler*, you're off to wrest the magic hourglass from the evil Graf von Unpronounceable with the assistance of 1980s technology (which is like 1980s technology - only the guarantee has run out). In *The Magic Stone*, the scenario has you searching for the all-night alchemist and the means of turn-

quarade for the computer literate which marks Commodore's first substantial original title in the genre. For your £14.95 you get a large-format book packed with full-colour illustrations, in which author John Worsley tells the tale of a fortune in diamonds hidden on the Isle of Wight. By reading the book and studying the illustrations, and by exploring the 21 locations-cum-games which feature in the accompanying software, you should be on your way to discovering and claiming one or more of the 40 diamond talismen offered as prizes - and possibly the even more valuable Great Wight Eye.

Better still, Commodore have established a royalty fund which will grow by 50p with every copy of the game purchased. So successful claimants not only get to keep the diamonds but will have at least one share out of the 50 available in the fund's total when it closes. That will be when all 41 talismen have been claimed, when the fund has reached £1 million, or in December 1993 - whichever happens first.

All clever stuff - and very fair, too; especially since you can claim by post and don't actually have to dig up the treasures. But for a concept that aspires to Williamsesque sophistication - and certainly has an up-market price tag - *Spirit* falls a little flat when it comes to the games element. Co-author Ian Gray seems more at home with graphic adventures, such as his goodly *Heroes of Kara*, than with the tedious and sarny arcades he's devised here. They're a little too difficult for the younger player and probably rather too true to the conventional adventurer to bother mastering.

Yet I've played (worse still, bought) poorer efforts, and as two-score chances of winning a rock plus a share of perhaps £1 million might just give *Spirit* a place in the charts that it wouldn't otherwise deserve.

And finally, since characters from the past have figured pretty strongly in this month's column, can you deduce what (or who) Sherlock Holmes and the Goons had in common? First correct answer out of the hat - on a postcard, please, by Friday, 1st February - wins a mini fastload cassette of *Storm Warrior* - *From Ranner's feature-packed 12-screen arcade adventure and a classic of its type.*



Eureka - travel through time to win £25,000

Commodore are also said to like the idea of adding a multi-player, interactive game as a Computist rival to *Mud* - originally run on Essex University's DEC 10 computer and recently acquired by Century Communications for relaunch later this year.

Two adventures of very different calibre are included in *Select One* - the compilation cassette of 12 games for the £4 selling at £12.49. Sadly, *King of Power*, originally published by Quicksilver at £9.95, has about as much appeal as a day-old pot noodle. It is supposed to be a graphic adventure, but all you see are crude sprite representations of various objects or, if you type PICTURE (though the original may never told you this), you can call up a view of three walls marked with N, S, E or W to indicate legitimate exits. I legitimately exited after only a few minutes of disbelief.

## Denis the micro-menace

*Denis Through The Looking Glass* is something else again; a Quill-generated text adventure in which the PM's hubby must thwart everyone and everything in the way of satisfy-

ing lead into gold, machine coders attempting to convert Spectrum games for the £4 will be familiar with the challenge.

Both adventures accept the usual verb/noun pairs plus single-letter inputs for frequently used commands. The graphics are not at all bad, there are some nice puzzles, and the HELP option is, if anything, a little too obtrusive. Still, the fact that I didn't speed along suggests that the full game will in each case provide even fairly experienced adventures with a few hours of contemplation.

A few more than they might expect, in fact. This is because, apparently, neither *Time Traveller* nor *The Magic Stone* has a SAVE facility. Together with the fact that both titles take around ten minutes to load, this means that you'll have plenty of time to console yourself with the thought that there are Kozla Pad outfits for the first three players of each adventure to declare the most expeditious solution. Some irony there.

## Spirit of Commodore

Prizes of even more sparkle are your incentive in *Spirit of The Stones*, a kind of Mac-

*Can you afford to write for anyone else?*

**ocean**

**Leaders in Computer Games require programs and programmers**

1. Original game programs for the Spectrum or Commodore 64 are urgently required - Arcade, Strategy or Adventure. We pay top royalties or tailor a contract to suit your needs - WorldWide sales ensure the best possible deal.

2. Programmers to work in 280 or 6502 assembly language for contract work or translation coding - best rewards.

**ocean**

Write or phone in confidence to Software Development, Ocean House, 6 Central Street, Manchester M2 5NS 061-832 6633

## ★★ MOONRAKER ★★

★ NEW ARCADE GAME FOR ★  
THE COMMODORE 64, PLUS JOYSTICK

Test your skills - are you the BEST or one of the rest?

Enter codename into the Moonraker Patrol Log and FLY your sub-orbital craft around the planetoid Geovior into a 3D fly-into space scenario over an extensive lunar-type landscape.

DEFY the 'Fireball' DEFEAT the Scavengers, and GAIN PROMOTION through the ranks of the ELITE MOONRAKER Patrol.

★★ MOONRAKER - FANTASTIC VALUE at £6.95 ★★

also for the Commodore 64

★ SPRI-TECH ★  
@ £5.95 ★

Have fun making sprites in MONO or MULTICOLOUR LOAD, SAVE, REVERSE, INVERT, NUJGE - it's so easy - aids animation!

★ GADGET 64 ★  
@ £5.95 ★

Writing your own programs? RENUMBER, APPEND & DELETE - satysfyingly simple - Your "BASIC" essentials at a Budget Price - GADGET 64

★★★ FREE C10 cassette for your own programs ★★★  
with all mail orders for SPRI-TECH or GADGET 64

You like our Software & Budget Prices - Tell your friends!

Order Now - send your Name, Address & Order Title, enclose P O or Cheque for full amount and post to

IdJ Gilmour Ltd, Dept CU185,

4 Copse Close, Iass, Hampshire GU33 7EW, England

## PCN REVIEW NOV 83

"The facilities for setting selection criteria... are impressive"

"It represents very good value for money"

"... particularly easy to use"

**NOW EVEN BETTER!**



## 'SIMPLY FILE' DBMS

THE PRACTICAL FILE SYSTEM

PET 2000-8000 £65 + VAT

CBM 64 (DISK) £60 + VAT

Send for details of other programs and free newsletter

Simple Software Ltd 15 Havelock Rd  
Brighton Sussex BN1 6GL  
Tel (0273) 504879



## NOW A DEALS FOR READERS PRODUCT

# MusiCalc

## What the papers said

“ MusiCalc is a program which will stretch your SID chip to it's limits. It is a synthesiser which makes my monophonic synthesiser look like a barrel-organ. ”

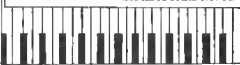
“ ...would even have the BBC radiophonic boys drooling. ”

“ This is an excellent product and a good synthesiser. ”

YOUR COMMODORE Dec 84.

“ The attractions of the software go way beyond sound quality. It is for a start super friendly - and it has the versatility to make it a genuinely useful compositional tool for the experienced and adventurous musicians. ”

WHAT KEYBOARD Nov 84.



# EDUCATIONAL SOFTWARE

## VIC-20 UNEXPANDED

O level CSE Revision Aid  
 O Level CSE Revision Aid  
 CSE Revision  
 O Level CSE Revision Aid  
 Revision 12 14 Years  
 Revision 12 14 Years  
 Revision 8 11 Years  
 Revision 7 10 Years  
 11+ Revision  
 Quiz 9 99 Years

## NO EXPANSION RAM NEEDED

**Micro-De-Bug Consultancy**  
Dept CU, 60 Sir John's Road  
Selly Park, Birmingham, B29 7ER  
Tel: 021 472 7610

DEALER ENQUIRIES WELCOME

## Superbase 64

TRANSFORMS THE COMMODORE 64 INTO A FULL-FEATURED PROFESSIONAL DATABASE SYSTEM, WITH UP TO 1000 CHARACTERS PER RECORD, OR UP TO 10 ADDRESS... AND UP TO 328 INDEXES PER RECORD. DEFINABLE AS KEY, TEXT, NUMERIC, CONSTANT, RESULT OR DATE. SORTING AND EVEN HAS A SPREADSHEET AND QUERYING. EASY INPUT FROM WORDPROCESSOR OR PROGRAM OPTIONS. SORTING/TRANSFORMING. FULLY 64 IS ESSENTIAL. \$19.95. WANT THE BEST FROM WITH INTELLIGENT BUSINESS/REFERENCE MANUAL.

	Q.R. PRICE	CDN. PR.	S&H. CH.
100-1000	\$19.95	\$26.95	\$2.00
1000-2500	\$29.95	\$39.95	\$2.00
2500-5000	\$39.95	\$54.95	\$2.00
5000-7500	\$49.95	\$69.95	\$2.00
7500-10000	\$59.95	\$84.95	\$2.00
10000+	\$69.95	\$99.95	\$2.00

**JETPROM** YOUR PROGRAM  
WILL REALLY  
TAKE OFF WITH  
OIL JETPROM, AN 800% COMPATIBLE WITH  
IBM BASIC. JETPROM COMPILES BASIC  
PROGRAMS INTO MACHINE CODE, RUNNING  
UP TO 25 TIMES FASTER... AND USING  
UP TO HALF AS MUCH MEMORY. TO GIVE  
FASTER LOADING, NO WILDER PROGRAMS  
AND IT EVEN ACCEPTS BASIC EXPANSIONS  
AND MACHINE CODE ADDITIONS AS WELL!  
OUR PRICE DOESN'T EVEN BEGIN TO

**Master 64** HAS EVERYTHING YOU NEED FOR PROFESSIONAL STANDARDS BASIC IV, MACHINE TYPE MONITOR, AND AN POWERFUL NEW COMMANDS, INCLUDING BODILY, BUMPERS BASIC, NIFTY ADDRESS FILES, QM DATA COMPRESSION FORMATTING, SCHEM DICES, MATHS SCHEMS, DICE CONTROL, RECORD GENERATION, 22 PLATE OVER 40 TOP, SCREEN EDIT, SCREEN DUNE, INC. HELP... ALL FOR THE PRICE OF ONE!

VIZAWRITE 64

**VIZAWRITE 64** VIZAWRITE 64 IS A MICRO-PERSONAL, LOW COST WORD PROCESSOR WITH DISK-ORIENTED FORMATTING. THIS TRULY FULL REWRITE OF THE 64'S COLUMN, CHARACTERS AND MEMORY FEATURES... AND SUPPORTS VIRTUALLY ANY PRINTOUT WITH A COMPRESSORIVE AND EASY-TO-FOLLOW USER HELP (PAPER MANUSCRIPT). VIZAWRITE IS THE ULTIMATE PERSONAL COMPUTER WORD PROCESSOR! AVAILABLE ON COMPATIBLE SYSTEMS (IBM, SONY, SANYO, SANYO) OR WITH VIZAWRITE (IBM, SONY, SANYO).

\*\*\* WENT 27 NOVEMBER \*\*\* CALL US TODAY \*\*\* CM 01-544-2264

[illegible]

PRICES INCLUDE ITS VAT AND ARE  
CORRECT ON GORDON TO PRESS.  
ORDER BY POST OR PHONE, VISA  
CHECK, ACCESS/BANKCARD CARD OR  
OFFICIAL ORDER DISCOUNT IS BY  
SAME DAY 1ST CLASS POST, PPE-  
TALS QUOTED FREE. PRODUCT DATA  
AVAILABLE ON REQUEST. PPS A

**Calco**  
Software

LAKESIDE HOUSE, KINGSDOM HTL, SURREY, RT 2 Jul-18c 03-846-375

**NOW A DEALS FOR READERS PRODUCT**

MusiCalc

## More from the press

6 There is no doubt that these Musicalc programs provide the most comprehensive exploitation of the 64's music generating capabilities. 9

COMMODORE USER Nov 84

“Musicalc is an incredibly powerful system... Even the briefest listen will win you over.”

COMMODORE HORIZONS Dec 84

6 If music is your interest - I recommend you get a demonstration of MusiCalc.

READING EVENING POST.

**To do just that visit:** Chromasonic Pilot Software - Rathbone Place  
 Tomorrow's World Today - Oxford Street, Piccadilly  
 Waterlooville Games - Brighton  
 Peterborough Computers - Tomorrow's World - Hull  
 The London Rock Shop - Soft Shop - Chalfont  
 Or ask your local Commodore dealer or

POST THE COUPON OVERHANG

## COMMODORE 64 OWNERS

**MIDLAND COMPUTER  
LIBRARY**

**The First & Largest Commodore Library in the World**  
(often copied but never equalled)

- 1 All the latest titles very two weeks
- 2 Hire your first two games absolutely free up to £2 in value
- 3 Life membership £6
- 4 Hire charge from only £1 inc p&p for full 7 days
- 5 No limit to the amount of games you can hire
- 6 All games originals with full documentation
- 7 Games, Business and Educational software
- 8 Return of post service guaranteed
- 9 Lowest new hard and software prices in the UK
- 10 Join now on 14 day money back guarantee
- 11 Over 1,000 games in stock inc. many US imports

MIDLAND COMPUTER LIBRARY

**31 Evenlode Close, Lodge Park**

Redditch B98 7NA

Telephone 0527 23584



# ACCOUNTING FOR YOUR SINS

## A layman's encounter with Commodore 64 accounts software

by Karl Dallas

Most owners of small businesses or the self-employed shudder at the very thought of accounts; producing them is probably the most loathed chore of the business year. It's now possible for businessmen to do their accounts properly and relatively cheaply with a Commodore 64 and appropriate software. And here lies the problem. If accounting jargon leaves you cold (and it does for most of us), learning to use that accounting software may be yet another problem to contend with. Karl Dallas finds out how Gemini's **Cashbook plus VAT**, and Dialog's **Transact** and **Invostat** packages shape up to solving his financial problems.

As a self-employed financial idiot, who got into computers mainly because I can't add two and two without getting the square root of minus one, the hardest chore of my year is the preparation of my accounts. And since HM Government devised that kind of torture known as Value Added Tax, it's become a quarterly problem, too.

In fact, when I bought my first 8K Pet back in the Seventies, I must confess that it was financial number crunching I had in mind rather than word processing, spreadsheets and databases which is what keeps it busy now.

I've looked at some of the really powerful business packages, and they impress me mightily. But, frankly, the manuals assume so much prior knowledge of accountancy jargon (did you know Aged Debtors aren't really old aged pensioners?) and the procedures of single entry journal transactions, whereby cash received may be entered as credit to the sales account, but a debit to the cash ac-

count, making the whole thing harder to understand than reverse Polish notation, that they frighten me right away.

Until now, therefore, I've been doing my accounts on a spreadsheet. Every item is entered, its VAT calculated, and at the end of the month I've got a complete summary of what's been going on from which my accountant can prepare something the Inland Revenue and HM Customs and Excise will find acceptable.

With the increased use of low priced but powerful machines like the 64, however, it's become possible for businessmen to get into doing their own accounts properly. And the software doesn't cost hundreds of pounds, any more, either.

So I approached the accounts packages from Gemini and Dialog in ignorance and with trepidation, and though I ended up preferring one to the other, I won't be surprised if the professionals

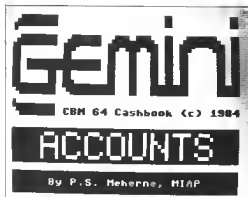
say I'm wrong. My fellow financial idiots may agree with me, however.

### Installation

Both programs are available on disk or tape, and of course the disk version is quicker to LOAD. Gemini charges £5 extra for the disk version of their **Cashbook** and **VAT** package, costing £64.95. I had them on disk, but Gemini's manual says their program takes about eight minutes to LOAD from tape.

The Gemini program doesn't include an invoice generator, but it does have a special VAT utility, VAT file, aimed specifically at people who are on the special retailers' scheme. This would become very valuable if, as seems possible, the Government starts to levy different rates of VAT for different products.

On the other hand, Dialog's book-keeping system is called **Transact**. It costs £30 on disk, and you can pay £30 extra for the accompanying **Invostat** in-



voice and statement generator. I have my own invoice forms stored on disk as word processed pages, so I could live without the invoice generator, especially since it doesn't integrate with Transact.

I have this dream of one day typing in one set of information when I pay out for something or (more rarely) receive a payment, and have all the rest of the work done for me, but that day hasn't come yet.

Obviously, if you don't need Invoistat, then just buying Dialog's Transact package could save you a lot of money.

## Comparisons

When you start running the Gemini program, you're presented with a ready-formulated system into which you can start inputting data right away, with a very comprehensive list of 199 nominal account codes and titles, starting with Sales (1) and ending with Director's Loan Account. These names and codes can be changed, and there are just under 100 blank codes. If no titles are entered into these codes, then they are skipped while the system is running.

There is a set of codes for limited companies, and an alternative set for sole traders or partnerships. Obviously, both would not be required at the same time. Gemini gives a useful list of the complete set of codes in the manual.

In comparison, Dialog offer only 90 codes (probably adequate for most small businesses), and the first ten are preset as 'control accounts' to monitor the bank, cash, debtors, creditors, output and input VAT, VAT clearance etc.

The rest you have to sort out for yourself. I must confess I found the Gemini list useful in helping me work out what I might need, but a few minutes' careful thought would probably help you work it out on your own.

Once you get into recording transactions, the distinctions between the two programs becomes obvious.

The Gemini program is much more tightly structured, with certain account codes restricted to receipts, others to payments, and some to both. On the other hand, I was amazed to find it didn't calculate the VAT on each individual transaction.

I asked the Gemini people about this, and David Perkins, who helped to devise it, told me that they had been advised to do it this way by the Customs, though they might have preferred to have included automatic calculation. The problem, of course, arises if you have a mixture of taxed and zero-rated sums, or if there is more than one rate.

Certainly, one of the reasons why I wear a wrist-watch calculator is so that I can always work out how to derive the tax from the gross sum (by dividing by 7666667, since you ask), when I am sending out invoices, because my WP

program doesn't have a calculator, either. It's a little irritating, but I can live with it. Dialog, however, does give you the option of automatic VAT calculation.

After transactions have been completed, and verified, they are SAVED to disk or tape as data files. Both programs have specimen files on disk, but of course in practice you would SAVE new files to a newly-formatted disk as soon as you started working the system.

Gemini point out, rather alarmingly, that if you should overwrite the data on the program disk, it'll be impossible to run the program. I tried backing it up (I always try backing up my program disks, even though it rarely works on the 64), but it didn't work. Oh for the days of double!

One of the things I preferred about the Dialog program was that it came with a small demonstration data file, which enables the first time user to check out how it works. Gemini claimed that their data file could also be used for demo purposes, but there was no documentation about how this could be done.

## Printing

Dialog provide no information on printer configurations, and there is no facility for setting up any printer. On the other hand, printing is well documented by Gemini, who specify an 80-column printer and have a 'configure' option allowing the page length, dis/continuous paging, ASCII code for the f sign, and device number to be altered.

The name of the company is defined while configuring the printer, surprisingly, though of course it could be incorporated in the data file name, eg 'Any-companydata'.

Several options require the printer to be attached, and in fact Gemini assume a hard-copy print out before shut-down (a good practice). Dialog was very unhelpful if you chose a print option by mistake without having the printer connected and will END with a 'device not present' error.

'Typing CONT gives a 'Can't continue' error, and if you GOTO 0 (the ML routine opening call), the program will run again, but you've lost all the data in memory.

In fact, Gemini advise keeping the printer connected and turned on before you even RUN the program. If an interface, Interpod for example, is connected, then that should be configured before the program is RUN.

FOR	Gemini: powerful, limited printer configuration possible
AGAINST	Gemini: no automatic calculation of VAT on each transaction
FOR	Dialog: easy for the beginner to get started
AGAINST	Dialog: less powerful, no printer documentation

## MONTHLY ACCOUNT SUMMARY

1	SALES (1)
2	SALES (2)
3	SALES (3)
4	SALES (4)
5	FEES INCOME
6	OWN CONSUMPTION
7	OPENING STOCK & WIP
8	PURCHASES
9	DIRECT LABOUR
10	CLOSING STOCK & WIP
11	SUNDRY INCOME
12	DEPOSIT INTEREST
13	DEBT RECEIPTS
14	INVESTMENT INCOME
15	DIRECTOR'S REMUNERATION
16	SALARIES & WAGES
17	WIFE'S WAGES

Gemini's nominal account summary

## MONTHLY SUMMARY - JANUARY

1	SALES (1)
2	OPENING STOCK & WIP
3	PURCHASES
4	CLOSING STOCK & WIP
5	WAGES
6	USE OF HOME AS OFFICE
7	TRAVEL EXPENSES
8	SUNDRY EXPENSES
9	TELEPHONE
10	POSTAGE & STATIONERY
11	COURTANCY
12	COMMISSION
13	PRINTING
14	BANK INTEREST & CHARGES
15	VEHICLES - DEP'T
16	PLANT & EQUIP - DEP'T
17	VEHICLES
18	PLANT & EQUIPMENT

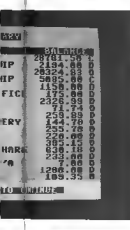
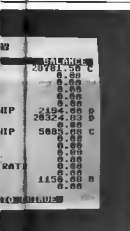
Monthly expense summary on Gemini

## Documentation

Neither program is particularly well documented. Both have A5 booklets, the Gemini of 24 pages, the Dialog of 20.

The manual for Gemini's 'VAT file' says specifically that 'this package is not intended to be a guide to the workings of Value Added Tax' and I'd say that a careful browse through any standard book-keeping tutor would be necessary to enable you to get the most out of either system. Finally, both manuals have ex-





Accounts summary on Transact

sensitive appendices of printed examples, which are very helpful

### Conclusions

In plumping for the Dialog package, you may realise that I have some fears that, in the long run, and after I've studied the requisite books from my local library, I might wish I'd chosen the Gemini.

It's unlikely that you'd be able to use the same data file format, if you did decide to upgrade. But I'm still going to stick to my instinct.

Even if I'm right in suspecting that more careful study of the Gemini package would be well worth while, life's too short. I'm not an accountant, after all, and while I'm still hoping for that elusive pot of gold at the end of the next rainbow, I'm fairly confident that I'm hardly likely to see my business expanding so much and so fast that Transact would act as a brake on further development.

But if you're starting up, have big expansion plans, and have the time to get things right first time, then take a look at Gemini. It may cost twice the money, but I suspect that it's worth it, in the long run.

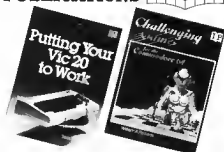
**Combook Accounting**  
\$59.95 (tape) \$64.95 (disk)  
Gemini Marketing  
18a Littleham Road  
Brimoth, Devon

**Transact**  
\$50 (tape or disk)  
Dialog Software  
293 Copperfield  
Unwin Farm Estate  
Chigwell, Essex

**InvoiceIt**  
\$50 (tape or disk)  
Dialog Software  
293 Copperfield  
Unwin Farm Estate  
Chigwell, Essex

## MAKE THE MOST OF YOUR COMPUTER.

### INTERFACE PUBLICATIONS



- ☐ Mastering Machine Code on your Commodore 64  
Mark Greenshields £7.95
- ☐ Mastering the Commodore 64  
Mark Greenshields £7.95
- ☐ Challenging Games for the Commodore 64  
William A Roberts £3.95
- ☐ Putting your Commodore 64 to Work (15 programs, including a complete word processor)  
Chris Callender £4.95
- ☐ Putting your VIC 20 to Work  
Tom Lea £4.95
- ☐ 50 Outstanding Programs for the VIC 20  
Tim Hartnell £6.95
- ☐ Delving Deeper into your VIC 20  
Philip Campbell £4.95
- ☐ Dynamic Games for your VIC 20  
Mathe's Book £4.95
- ☐ Creating Adventure Programs on your Computer  
Andrew Nelson £4.95
- ☐ The Art of Structured Programming  
Peter Iuliff £5.95
- ☐ The Easy Way to Program your New Computer  
Tim Hartnell £3.95
- ☐ Getting Acquainted with your VIC 20  
Tim Hartnell £6.95
- ☐ How to Program the Commodore 64  
Robert Young £5.95

These books are available from most book and computer stores. In case of difficulty, order directly from us

Interface Publications, Dept. QCU,  
9-11 Kensington High Street, London W8 5NP.

Please send me the indicated books I enclose £

Name

Address

### INTERFACE PUBLICATIONS



We're the Experts.

IT'S A DEED! Interface Publications are distributed exclusively in the UK and Eire by W.H.S. Distributors. Export orders handled by Interface Publications.

# Superbase 64

## The natural development for Commodore 64 users

Unlock the full potential of your disk-based Commodore 64, use Superbase 64 – the complete records-handling system that puts business-style power and practicality at your fingertips

Superbase 64 solves a host of filing problems with its easy record formatting, powerful indexing and sorting, extensive outputting options, and its 'Superbasic' programming capability.

- |                     |                        |
|---------------------|------------------------|
| ■ Invoices          | ■ Stock                |
| ■ Finance & Banking | ■ Prospects            |
| ■ Collections       | ■ Management Accounts  |
| ■ Recipes           | ■ Car Fleet Records    |
| ■ Personal Filing   | ■ and many, many more! |

### Superbase 64

– The complete information control system for the Commodore 64 includes a simple to-follow manual

Complete your Commodore 64 – Complete the coupon

More information on Superbase 64 is available from Commodore Dealers. Also, Payment to form Precision Software is direct from the authors of Easy Script.

Now with Audio Learning Cassette!

Please send me more information on Superbase 64

Name \_\_\_\_\_ Tel \_\_\_\_\_

Address \_\_\_\_\_

Occupation \_\_\_\_\_ Age \_\_\_\_\_

PRECISION SOFTWARE LTD 6 Park Terrace

Worcester Park, Surrey, KT4 7JZ

Tel 01-330 7166

Telex 8955021

PRECISION SOFTWARE

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

PRECIS G

## Write away

### Adventure nul

I am writing to you from Sydney, Australia. I am a regular reader of your excellent magazine and I have found it very helpful in assisting me to learn more about my Commodore 64. Even though the advertisements aren't any good over here, I still love to read the articles and programs.

I am a crazed adventure game addict and currently have two games that I am hopelessly stuck on. Perhaps you or some of your readers could give me some help. The first one is "Heroes of Karn". How in heaven's name does one kill the pirate, and what will kill or disable the serpent? Secondly, is "The Secret of Barnow Manor". I'm in the stone cell and can go no further. Help!

M Jockey, 601 Marano  
Street, Maresfield 2148, NSW,  
Australia.

Can any Karn or Secret solver put this Antipodean Adventurer on the right track?

### ZX Printerface tip

I am sure that some Vic users have the Softex Computers interface which connects the Vic-30 to the ZX printer and would welcome some information regarding it.

Whilst writing a machine-code screen dump for the set-up, I discovered that the Printerface software uses locations 251 and 254 while printing. Thus, I had to find some other zero page locations for my program to use. I have found that locations 91 102 and 105-110 can be used temporarily.

Also ZX printer users will have noticed that, sometimes, the device will print illogically. This has a very simple cure. Just feed some paper through before doing any printing and after tearing any paper off.

M J Davies, The Waverley, 79  
Rhosnacres Street, Llandell,  
Dyfed, Wales

### Teach-yourself Victuals

First off may I point out that I'm rather new to the world of computers and I'm still finding my way around the programs. However, I must point out that your magazine is just what's wanted for someone starting up with computers.

It's not full of very advanced programs, nor over filled with advertisements (as some magazines are), it gives us a very good magazine that covers a wide slice of computing.

I have now found the one magazine I want out of the hundreds that find their way on to the

newsagents shelves. Commodore User is a must if you wish to get to grips with your 64 or Vic-30.

The only thing I would ask for is some small programs that are of an educational kind to be added to the library of all those fathers who utter the excuse, "It's for my children". Make spelling, Highway-code – Green Cross code – anything as long as it's of use for the children.

If you have any readers out there that may be able to help I would like to hear from them. Keep up the good work.

L A Hutchings, PO Box 68,  
Derby DE6 6QP

As you probably know, there's an increasing amount of good and cheap educational software now available for the Commodore 64 (we're reviewing a huge batch in this issue). We don't publish educational materials for the simple reason that we rarely receive any. It's up to you to write it and send it ...

### Help for the handicapped

I enjoyed reading my first copy of Commodore User. Can I suggest that you allow one page for your magazine to tackle the problems of the mentally and physically handicapped Commodore user? There is a drastic need for up-to-date information in the highly specialised field, both from teachers of the mentally handicapped and parents, of which I am one.

My son is a 5½ year old Downs Syndrome child. He copes well with the Commodore keyboard, but finds that most games on the market are too sophisticated for him to master. He requires programs which build up very slowly as his thought patterns and reactions are slower.

I urgently require a list of suppliers of suitable software. Can you help? Looking forward to hearing from you.

R Forsyth, 16 Balgownie Drive,  
Callander, Perthshire FK11  
8EU.

Worthwhile suggestions of this kind are always welcome. Trouble is, we don't really know how many mentally or physically handicapped users of Commodore computers there are out there. We need you to write in and tell us. Meanwhile, can any software suppliers offer any suggestions to Helen Forsyth?

Send your letters to:  
Write Away,  
Commodore User,  
30/32 Farrington Lane,  
London EC1 3AU.



AND FOR THE REALLY  
BROAD MINDED

# LOVE BYTES!

COMMODORE 64 ONLY TAPE £5.95 (OVER 18'S ONLY)

ADULT FORFEITS AND  
REWARDS GAME  
WITH ARCADE ACTION  
"POSITIVELY THE  
NAUGHTIEST THING YOUR  
CBM 64 EVER DID!"

CHEQUE OR POSTAL ORDER TO:

## HARBOUR SOFTWARE

134 EAST WEARE ROAD, PORTLAND, DORSET  
Tel: (0305) 820487

DEALER ENQUIRIES INVITED

## THIS IS A PLUG FOR... THE CENTRONICS PRINTER INTERFACE PLUS CABLE

VIC20 & CBM 64 VERSIONS  
SIMPLE TO INSTALL AND USE  
PRINT OR LIST FROM  
BASIC OR MACHINE CODE  
CARTRIDGE-BASED  
SAVES RAM

JUST £42.99 INC

MAIL PO/CHEQUES TO:  
GAG MICRO SERVICES  
63 PORTLAND ROAD  
BIRMINGHAM B15 9HS

## Y-E-S Vic 20 & 64 COMPUTERS

SALES & SERVICE

### SAY YES FOR COMMODORE HARDWARE, SOFTWARE & PERIPHERALS

YORKSHIRE  
ELECTRONICS  
SERVICES  
LIMITED

Coxton House,  
17, Fountain Street,  
Morley, West Yorkshire  
Tel 0532-522181

### PRINTER BARGAINS FOR VIC-20 AND CBM-64

Prices include interface, cable, VAT and postage

#### SEIKOSHA GP100VC

ONLY £149

MADE FOR THE COMMODORE  
EXCLUSIVELY 6 x 7 dot-matrix, 80  
col, 30 cps, 154 chars inc Commo-  
dore graphics Graphic, Double  
width & Standard tractor feed

#### SPECIAL OFFER UNTIL 25th JAN

Shimizu CPASO ..... £256  
Daisy Step 2000 ..... £299  
Smith Corona TP-1 ..... £228

#### BROTHER M1009

ONLY £199

HIGH QUALITY PRINTER AT LOW  
PRICE 9 x 9 dot-matrix, 80 col, 50  
cps 194 chars and over 100 other  
chars Enlarged, condensed, italic,  
super & sub scripts and more. Function  
feed, tractor option

..... EPSON RX800T £299  
Seikosha GP700A ..... £369  
Canon PW1080A ..... £369  
Mannesmann Tally MT90 ..... £255

Payments to: **SHIRE COMPUTER SYSTEMS**

Bryn Cottage, Peniel, Caernarfon, Dyfed  
Tel. 0252 53246 for further details

### Designed and written by us for Commodore the COMMODORE MUSIC MAKER A must for your Commodore 64 this Christmas

- Turns your Commodore 64 into a Musical keyboard
- Complete with 'piano type' keyboard when fits onto the computer
- Songbook and music tutor book
- Play popular tunes even though you've never played before
- Imitate sounds of dozens of instruments
- Compose your own tunes and play with added accompaniment and rhythms

\* Disk or cassette available  
At this for only £29.95. Our opening offer includes the extra songbook. We  
are the 64 specialists. Send SAE for software & peripherals list. Free P&P on  
items over £10 Access Bar/laycard

M K MUSIC AND COMPUTERS

17 BRIDGE STREET - LEIGHTON BUZZ - RD - BEDFORDSHIRE  
TEL: 0525 37662

## Commodore 64 + Vic-20 Club

Trade supplied with full games and business  
software for all Commodore machines

All original software - business and games. New releases  
for CBM64 every two weeks

Send your name and address to go onto our mailing list

M. J. Seaward

St Olafs Road, Hill Head, Stratton, nr Bude,  
Cornwall.

Telephone: Bude 4179

## COMMODORE 64 DATABASE DATAFILE

Powerful, efficient, flexible, all software included. 30 file alpha-  
numeric, 10 file alphanumeric, 10 file defined fields memory  
check total numeric fields, multilevel interrelational, orbital and  
between limits searches etc. Fully Menu driven with comprehensive  
easy to use instructions. Disk and cassette fully compiled. Can be  
used with 1315 1525 1555 GP 100VC MPC 401 MPC 800 DPS 100  
promoters and 1920 pinpointers if required and most configurations with  
suitable hardware interface.

Outstanding value. cassette £7.45, disk £12.25 fast delivery by  
first class mail. Send cheque postal order to:

A+C Software, Dept 3, 75 Oakthorpe Gardens,  
Tivdiale, West Midlands B69 2LF

## When it saves you Time, it saves you Money... which adds up to a great add-on!

Simply fit the CP NUMERIC KEYPAD to  
your CBM64 or Vic-20 and forget it.

Always ready to use

### NO SOFTWARE REQUIRED

Compatible with all  
commercial software.

Leave all ports free.

Essential for the  
serious user because  
TIME IS MONEY, AND  
THAT'S WHAT COUNTS!

Please send cheques/PO,

Commercial Products  
11 Hylands Close

Furnace Green  
Crawley, Sussex RH10 6RX



includes  
RETURN key  
for  
ONLY

**£29.95**  
inc VAT & P&P

ASSEMBLER 64. Professional development tool. Full assembly disassembler  
for all Commodore 64 VARIANTS. PSK1000 1000 and CONTROL 1000  
MANOS ..... £11.99

DATABASE 64. Menu driven database. Max. 65,536 records. 25 fields per  
record. 15 fields record. CHATP database. 100 INSURE DELIST ANFND  
records. 4548 H for records on any field including wild card and many more.

EXCEL 64. 2 databases to compare. 100000 records through data base ..... £11.99  
Zeta Power ..... £24.95  
Oxford Power ..... £24.95  
Superbase 64 ..... £24.95  
P&P Prog. 64 ..... £24.95

Full price disk ..... £17.00  
Full price cassette ..... £10.00  
Full price disk ..... £17.00  
Full price cassette ..... £10.00

Full price disk ..... £17.00  
Full price cassette ..... £10.00  
Full price disk ..... £17.00  
Full price cassette ..... £10.00

# Project

Having finished his Home Control series last month, Chris Durham has put away his soldering iron only to start wiring up his house. That sounds alarming, and it is. He's installed a burglar alarm that's controlled by either a Vic or Commodore 64. The system is called Sentinel, from Micro-Security, and you can install it yourself for just under £100. Not only that, it can also be used as the basis for controlling other devices



## It's a fair cop?

### The Sentinel burglar alarm reviewed

Last month I briefly touched on the subject of home security when I covered possible uses for the input board. Micro-Security, who hail from Hampshire, have gone a stage further and actually produced a system that lets you turn your Commodore 64 or Vic-20 into a burglar alarm, complete with window sensors, pressure mats, alarm bells and cables. It can also act as a control system, turning devices on and off at preset times.

#### Security system components

The complete Sentinel security system consists of the Sentinel interface unit, the control program on tape or disk, an external alarm with weatherproof enclosure, internal buzzer, ten magnetic contact switches, a pressure mat, a panic button, two junction boxes and 50m of cable plus chips, everything you need to set up your own burglar alarm system. The cost is £99.00 excl VAT, comparable to many similar self-contained alarm systems.

As with any DIY security system, the first thing to do is to install all the various components of the system; wiring up the windows and doors with the magnetic

contact switches, setting the pressure mat in front of valuable items or at a doorway and mounting the bell, buzzer and panic switch in the appropriate places.

The cables are then taken back to the two junction boxes which terminate all the circuits and allows neat cabling between the junction boxes and the Sentinel unit itself. The Sentinel connects the User-port of the computer using a ribbon cable, and also requires to be plugged into the mains for its power supply. The instructions are straightforward and exactly the same as for any DIY system. It is the use of the supplied software that separates it from a stand-alone alarm system.

#### The security program

There are two modes, security and control. Although you can run the control mode on its own, the security mode incorporates both, so you can use Sentinel as an alarm system and as a control system. Unfortunately this is not made very clear in the instructions.

There are facilities to alter the parameters of the program, set the date and time and test the alarms; the parameters

are normally set to the values you require and then the program stores them on tape or disk. When you next run the system these values are loaded in for use so you don't have to alter them each time. This is very handy, but the one exception to all this is the date. This has to be entered each time you run either of the main options. Even if you haven't swatched the machine off and wish to change from security to control, or just reset one of the parameters, you have to re-input the time and date again.

I am sure it would not have been difficult to have stored the date and use the computer clock to keep track of the time even between options. Although you don't change options that often, to keep typing the date time spoils the otherwise well thought out menu approach, where the function keys are used to select the options.

#### Sounding the alarm

In the security mode the interface unit monitors two input channels; these can be either normally closed (nc) circuits

continued on page 110

# Project

continued from page 169

such as the magnetic switches, or normally open (no) circuits such as pressure mats or IR (infra-red) detectors. LEDs on the front panel of the interface show the state of each channel.

When the system is activated an 'events log' is begun. This shows the time of activation and records all events on one of three devices: TV screen, tape or disk. You are allowed 30 seconds (which you can adjust as required) to leave the building after activation. From then on anyone opening a protected door or window will trigger the computer to start a 30 second countdown. At the end of this period (also adjustable) the alarm will sound for the period of time specified in the settings (default is 20 minutes), after which time the system de-activates itself.

The delay is to allow you to de-activate the system before the alarm goes off when you enter the house again. There is also a night-time mode which is designed for use when you are in the house and wish to protect yourself from forced entry. In this case there is no delay; as soon as a sensor is triggered the alarm goes off. Likewise the panic switch, this will activate the alarm irrespective of the state of the program, provided the Sentinel interface is powered up. One good point is that the internal buzzer sounds if any protected windows or doors are open when you attempt to activate the system usually.

## The control program

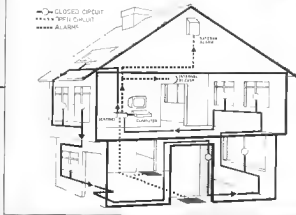
I found this slightly disappointing. There are four output channels which can be switched on or off at preset times. The settings are stored on tape or disk in the same way as the settings for the security system. You specify each of the on/off times for each channel, activate the system and it will then switch the channels as required (an LED on the front panel lights up when the channel is ON).

However, you can only specify one on/off period per 24 hours on each channel; 2 on/off periods per 24 hours would be much more useful and give greater flexibility to the system.

Also it cannot handle mains control without additional components such as power relays or opto isolated trans Micro-Security have said they intend to produce a mains interface and this will certainly make the system more useful, although it will also put up the price.

Although there is no way of combining the triggering of the security sensors and the switching on of the controlled outputs with the software as it is written, the two parts work simultaneously. Thus you can have lights being switched on in the house while you are away and have the security system activated. This does not preclude you writing your own soft-

● CLOSED CIRCUIT  
●●●●● IR INTRUSION  
●●●●● ALARM



ware, of course, and you could devise your own control and input system; opening the front door could then turn on the kettle and the light rather than an ear-shattering alarm bell!

## Drawbacks of the system

With any system which turns your computer into a dedicated controller of some sort you have to ask yourself a few relevant questions, how useful is it, does it do the job as well as a stand-alone system and is it worth the extra money?

Sentinel is let down in a number of areas firstly, the entire system is mains powered. This can be a major disadvantage for both a security system and a control system. One glitch in the power supply large enough to trip the computer and the whole thing switches off. The 30 second delay is also time enough for the burglar to switch off the power at the mains, he doesn't have to search for the control system! Secondly, after being tripped, the security system de-activates itself. Thus if you are away for two weeks and somebody attempts a break-in there's no protection from then on. Why doesn't the system reset itself, assuming the neighbours/police have re-secured the point of entry, and continue to monitor? (You could in fact modify the software to do this yourself).

Thirdly, the control system does nothing that couldn't be done equally well by a time-switch or two, with the advantage that the latter will not be affected by momentary interruptions in the power supply. Finally, here's an obvious point: while the computer is monitoring your burglar alarm system or controlling things, you can't use it for anything else.

## Advantages of Sentinel

Having looked at the reasons why Sentinel is not ideal, what advantages does it offer? Well, as a burglar alarm system you would be using it at times when you were either out of the house or asleep, thus putting your computer to use at times when it would otherwise be lying idle. The Sentinel unit gives you a total of

two input channels and six output channels; by writing your own software you could use it in a number of control applications in a more flexible manner than the supplied software permits.

It is possible to purchase the Sentinel interface without all the security hardware at a cost of £59.00 (incl VAT) thus saving £30 on items you may not want anyway. (The manuals do not show how to operate the Sentinel directly, but linking the supplied software will provide all the information you need.)

Finally, using something like the Sentinel does allow you to computerise your home to a limited degree if that's what you want to experiment with. It cannot therefore be dismissed as unsuitable for any particular purpose since different people will buy it for different reasons.

## Conclusions

Within the limitations of any system that attaches to a home computer, the Sentinel does what it says it will do, it provides both a security system and a control function. For someone who wants to experiment with computer control and do something useful with it at the same time, this is a well-made, easy to use system.

However, if you want a reliable burglar alarm to protect yourself and your property in a high risk area then you would be much better advised to invest in a stand-alone, battery backed-up system which does nothing else except guard your house. Sentinel is too dependent on a reliable and uninterrupted mains power supply; providing battery back up for both the interface and the computer would make it very expensive.

Although the software as supplied is perfectly usable, it would benefit from some improvements; this will not be a problem for the person who wants to experiment anyway. Overall, a useful system if you are going to use it for more than just a straight burglar alarm.

Sentinel security & control interface  
£59.00 (complete with security hardware)  
£49.00 (interface & software only)  
Supplied by: Micro-Security, PO Box 18,  
Havant, Hants PO9 3LS. Tel: 0705 444718.

## TOMMY'S TIPS

Tommy is Commodore User's resident know-all. Each month he burrows through a mountain of readers' mail and emerges with a handful of choice queries. The result, before you, is a wodge of priceless information and indispensable advice. There's even the odd useful tip as well.

Dear Tommy, I am the owner of a Vic-20 and the Vic 1515 printer, both of which behave impeccably.

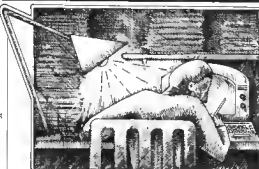
Last Christmas however I also bought a Commodore 64, but not before asking whether it was compatible with the Vic 1515. Yes, I was assured, there is no problem.

When, however, I linked the 64 to the printer, I found that the printer worked all right, but only if I asked it to print the simplest of instructions. With anything complicated it stopped at a different point on each occasion. As the printer still worked all right with the Vic-20, I assumed that there was something wrong with the 64, and my dealer kindly changed it. But the problem still persisted even with the new machine.

Persistent enquiries produced a magic phone number, which when I rang up I was told that the Vic 1515 is meant for the Vic-20 really. If I want to use it with the 64, before OPENING the logical file I must POKE 53265,11 to invalidate the screen, and after CLOSING the logical file I must POKE 53265,27 to bring the screen back again. I have followed these instructions, and the printer has worked almost without problem.

Since then however I have scrutinised every item of literature I could find including "Commodore User", but I have never found this instruction about POKEing. Is there any reason for this - which means is there anything wrong with my equipment?

This is due to a timing problem on the 64. The Vic-20 peripherals, the 1540 and 1515 etc, all suffer from the same problem, the device gets out of step with the computer due to the increased work that the 64 has to do in keeping the screen up-to-date. That is the reason the 'new' 1541 disk and 1525 printer were produced, they both have new ROMs which take account of this timing problem. Even they are not completely immune, try using two 1541 disks together for example! Commodore offered a new ROM



(at a cost of £25) to owners of the 1540 drive who wanted to use it with the 64. To my knowledge they have not produced one with the 1515. Turning the screen off is not an elegant solution, but the only other one is to sell your 1515 and upgrade to a newer printer.

Dear Tommy, I am very confused about an advert for the ZX Spectrum put in a Sunday magazine. In the advert it said "The Spectrum gives 41.5K of usable memory, more than most computers such as the Commodore 64 or BBC model B. So you can run bigger and better programs". I thought there was a mistake as the Commodore is 64K and the Spectrum is 48K. Please would you tell me if this is correct? I think a lot of other people will be confused and won't know which computer to buy.

This is a classic example of companies telling people only half the story. The advert is perfectly correct if you take the amount of memory available to BASIC. The Spectrum has 41.5K while the Commodore 64 only has 38.5K. This is because there is a large area of memory reserved for cartridges and the operating system etc. However, this is not the whole story because you have to take into account the sort of programs you are going to be running.

For example the 64 can have as much as 54K available for a machine code program, because the area reserved for the Basic

ROM etc can be switched out to make the memory available for use. The Spectrum cannot do this so a machine code program on the Spectrum is still limited to 41.5K.

In practice I doubt whether this is really going to be a problem unless you are going to be running some large database programs where available memory starts to become important. I suggest you should look at what you can afford, what software is available (does it do what you want?), is it easy to use and am the add on available and reasonably priced. Come up with a shortlist of computers and then go through and try them in the shop. You will find this a much better method of deciding on a computer than seeing which machine has the biggest byte!

Dear Tommy, Help! I won a Vic-20 starter pack some months ago in a competition and it has since developed a fault. As the unit is less than twelve months old, so problem you might think, but as I have no receipt none of the dealers areas we want to know, so I rang Commodore but they say I need proof of purchase. Catch 22!

I have now given up, I would like your advice as to the possible cause and probable cost (I know it's a lot to ask but I do have great faith in you).

The fault occurred while running a small game during which time the program appeared to crash locking up

the run/stop, restores etc. All this time the TV picture was showing. To clear the computer I switched off and on switching back on, the initial picture would not appear; the screen stays black and at the same time the CLR key is disabled completely. The fuse inside the Vic appears to be ok as the neon lamp glows when I switch on. Any ideas?

I am afraid your fault could be due to a number of things, some easy to trace and rectify and others much more difficult. To get it repaired through a Commodore dealer will probably cost around £25 since most dealers make a shipping/handling charge of around £7-10. Why don't you write to the runner of the competition and get them to send you a letter confirming when you won the prize and then use that to try to get it repaired by Commodore. Failing that, there are a number of independent companies who repair computers. While I cannot recommend any particular one, since I haven't used them, Trident Enterprises advertise as Commodore User and charge £12.50 + parts, their phone number is 0753 48785.

Dear Tommy, Could you please answer the following questions? I'm thinking of buying an Epson RX 80 FT printer to use with my Commodore 64. Do I need any additional hardware or software besides the printer before I can use it?

Secondly, do you consider the Epson RX-80 FT to be good for the price as have I made the wrong choice?

You will need a cable plus some form of interface to convert the Commodore output into the Centronics parallel interface format which the Epson printer uses. This can be either software interface which converts the User-port into a parallel printer port, or a hardware interface which plugs into either the serial port (like a normal Commodore printer) or into the User-port, some even do conversions of the control characters to give readable strings instead of graphics characters.

# SOFTWARE ON



**BC BASIC** At last the ultimate has arrived - a complete 9k extension in a ROM pack. Over 97 new or modified commands and functions have been added and because they have not been fully tokenised, the speed of operation is not affected. Abbreviations may also be used. The main areas of enhancement are **HI-RES, SPRITES, TEXT GRAPHICS, UOG, SOUND, MACHINE CODE AIDS, STRUCTURED PROGRAMMING, I/O and more.** For full spec call us on 073 57 4335 **£57.50 inc VAT**

See us on PRESTEL +2473222 or Telex 845467 TELFAC KUMA  
COMET KUMA TELECOM GOLD KUM 001

## PAINTPIC

The complete colour drawing and painting application using multi colour bit map. This outstanding program features **Pen, Brush and Text Modes; Curved Shapes; Straight Shapes; Pen and Brush Fills; Settable Colour; Horizontal, Vertical, Diagonal, By Dot, Brush Width, Character Moves; Point Moves; Block Moves.** No extra hardware items are needed beyond the basic computer, tape drive and colour TV. Send for full brochure **£19.95 inc VAT**



**Kuma Computers Limited**  
Unit 12, Horseshoe Park  
Horseshoe Road, Pangbourne, Berks RG8 7JW



**PHONE NOW (073 57) 4335**  
or SEND FOR DETAILS

Please tick box ☐ for information required, and send coupon to

Kuma Computers Ltd  
12, Horseshoe Park  
Horseshoe Road, Pangbourne  
Berks RG8 7JW

☐ COMMODORE 64  
☐ SIBUS  
☐ SHARP PC 1500  
☐ SHARP 700

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
POST CODE \_\_\_\_\_

☐ SHARP A  
☐ SHARP 3541  
☐ SAGE 8000 System  
☐ APICOT  
☐ EPSON HX-20  
☐ EPSON QX 10  
☐ NEWBRAIN  
☐ SPECTRUM  
☐ ELECTRONIC MAIL  
☐ PRINTERS

*Tommy's Tips*

Prices range from about £24 for the Stack software interface to £90 for the Implex hardware interface. Other interfaces include the Vic-sprint and Compimat at £50 and £62 respectively. All of these come with a suitable cable, but if you try any others check to ensure it does include a cable.

You will not go far wrong with an Epson printer. While there are similar and possibly cheaper machines available, Epson have a reputation for reliability. I use an Epson at home and at work enough said?

Dear Tommy, Have you any ideas on a small program, that will give me a list of eleven numbers, at random, where none of the numbers are the same in any one block of eleven?

I read with interest your tips on Commodore machines each month, my only comment being that there is not enough of them.

You need to declare an array of eleven elements and then store the random numbers as they are selected. It is then a simple matter of checking the numbers you have already got and rejecting the new number if it is the same. The following short program will give you eleven random numbers between 1 and 100 with no repeats (it will work equally well with numbers between 1 and 11).

```
10 DIM RN(11)
20 FOR A=1 TO 11
30 N=INT(100*RND(1))+1:
   FLAG=0
40 FOR B=1 TO A-1
50 IF RN(B)=N THEN
   FLAG=1: B=A: REM IF
   REPEAT THEN SET FLAG
   AND END LOOP
60 NEXT B
70 IF FLAG=1 THEN 30: REM
   SELECT NEW NUMBER IF
   REPEAT
80 RN(A)=N: NEXT A
90 PRINT "- CLR -"
100 FOR A=1 TO 11: PRINT
    RN(A): NEXT A
110 END
```

Dear Tommy, Can you explain how to do multiple sorts? For example, how to sort a group of approx 200 people into 6 categories, and then re-sort each category into Alpha/Num order without mixing the categories up again? I hope you can resolve this query.

Multiple sorts are best done using pointers. This means that instead of changing the order of the alphabe-

tic strings, you change the order of the elements of an array that 'point to' the strings. The following short program will demonstrate this method.

```
10 MAX=10: DIM
   CAT(6,MAX), NAMES(20)
20 FOR A=1 TO 6 FOR B=0
   TO MAX
30 CAT(A,B)=0: NEXT B.A.
   REM CLEAR ALL
   ELEMENTS OF ARRAY
40 FOR A=1 TO 30
50 READ NAMES(A)
60 C=VAL(RIGHT(
   NAMES(A),1)): REM
   FIGURE AT END
   DETERMINES CATEGORY
70 IF CAT(C,B)=MAX THEN
   PRINT "OVERFLOW IN
   CATEGORY": GOTO 100
80 CAT(C,B)=CAT(C,B)+1:
   REM INCR NO OF
   POINTERS HELD
90 CAT(C,CAT(C,B))=A
100 NEXT A
105 REM LINES 110 TO 160
   ALLOWS YOU TO CHECK
   CATEGORIES ON SCREEN
110 INPUT "WHICH CAT": X
120 IF X=0 OR X>6 THEN
   END
130 FOR A=1 TO CAT(X,B)
140 PRINT NAMES(CAT(X,B))
150 NEXT A
160 GOTO 110
200 DATA TREDI, GEORGE3,
   ARTHUR1, MIKE2, SUE4,
   ANNS, WENDY4, KAY6,
   MARGIE, JULIA4
210 DATA BOB3, TOM3,
   CHRIS1, BERT2, JOHN2,
   MARLEE, FLOS, JENNY4,
   PAM6, JOSIE6
```

You now have six rows of numbers, each number referring to the corresponding string in NAMES. By referring to the array as NAMES(CAT(X,Y)) you can now do a sort on any category, without mixing them up again, by changing the order of the numbers in the relevant row of CAT. The 11th element of each row of CAT gives you the total number of elements in that category. If you wish to access the strings in a number of different orders then just declare more arrays like CAT. This will also be considerably faster than moving the strings about, since you will not suffer from the dreaded garbage collection.

Send your queries to:  
**Tommy's Tips**  
Commodore User,  
Priory Court,  
30-32 Farringdon Lane,  
London EC1R 3AU.



# CLASSIFIED

**16K Vic-20 16K RAM** pack  
microcass in Basic 1. £70  
Games £20. Magazines, books  
super on edition £70 nno David  
Nixon A Wadham Street  
Penhill Stoke on Trent Staffs ST4  
7HF (0782) 410428

**Commodore 3032, 3040** dual  
disk unit 3040 printer All v/c  
Assemblers software Barger  
£600 Tel Brighton (0273) 771577  
after 7pm

**Vic-20 unexpanded with C2N**  
cassette £115. £120. 1st 1st  
b/v/c's magazines and tapes  
£110 Apple vogel 10 Hunt Road  
Fosse Foster Hill F3QD

**Printer, Shinwa CP-50** renal dot  
matrix Excellent 1/4 characters  
graphics. £5 cps bidirectional for  
any micro/min computer 5  
months old. Won another printer  
in competition New condition  
£170 Stockley 87774

**Disks downunder - C64**  
programs to swap Write to M  
Waters, 9 Darbridge North Street  
Fitzroy 3046 Melbourne Australia

## WHICH COMMODORE BOOK?

Free book catalogues at in-  
dependently selected Commodore  
books. Subscriptions bring  
latest selections and savings.  
Send for FREE catalogues to



**Vic, C2N, 16K** switchable RAM  
11 games Basic Part 1. Based  
on new condition £120 Phone  
Kevin Chantrell St Giles 4800 16  
Bury

**At last! Economical, in air PS22**  
joystick for Commodore 64.  
Comma complete with a cable &  
operating instructions. Specify  
male or female D connector,  
printer or modem connection.  
Price - just £29.95 inc VAT. P&P  
Mail order only to Firo  
Computers 1 Mitcham Road  
Seven Kings, Essex IG3  
5WU Tel 01 590 0833

**CBM64 programs to swap.** Only  
on disk. Over 1000 programs.  
Please send list to Stefan  
Berglund Sparagatan 15 39230  
Kjeller Sweden

**32K Vic user group** where are  
you? J Collins, 92 Grove Hill  
Lordon E18 01-989 1277

**All 1541 users** should join  
Club64, the international user  
group. For details of our excellent  
public domain software library  
contact Brendan Curry, 85  
Upper Drumcondra Road Dublin  
9, Eire

**Vic-20/CBM64 Software Here**  
no membership fee! Quality  
files (eg Skyhawk Jetpac  
Flight 015) from 50p per  
week. Already 500 delighted  
members join them now. All  
games originals. Send 2 x  
1p stamps for your list (please  
state which machine) to  
VSH(CU) 242 Pansom Road  
Morpeth Northampton

**Vic-20 Word Processor.** Victrol  
Powerful word processor.  
Facilities include: Large text  
buffer, auto centre text, variable  
line insert, amend, delete, copy,  
move, text word count, right  
justify, etc. Fully menu driven with  
comprehensive help to use  
instructions. Needs +16K  
expansion min. Great value  
cassette £6.95 disk £9.45

**Vic-20 Data File.** Takes the  
place of any card index.  
Facilities include: save/load file  
full sort/print/output records  
amend/delete records, memory  
remaining, etc. Needs +8K  
expansion min. Cassette £4.50  
both programs can be used with  
all direct connect v/c printers inc  
1520 printer. Fast delivery  
by first class mail. Send cheque  
PO to APC Software, 51 Ashtree  
Road, Twickenham W9 1AL  
2HD

**Attention all Vic-20 and CBM64**  
users. Whether you're a dealer  
user group, individual or software  
library, do you really know what  
commercial software there is for  
the Vic and the CBM64? Well it's  
taken us ages to come up with  
the document it covers games  
utilities, education, books and  
business software. It gives  
dealerships hardware prices,  
independent ratings and  
suppliers with addresses etc. For  
delivery asap send cheque/PO  
for \$5.00 UK or \$6.00 overseas to  
Cemantic Information, Box 015

**For sale.** Vic-20 cartridges,  
Adventureland and Voodoo  
Castle \$5 each or \$9 both. Will  
swap either for Prote Cove  
Contact: Barton of 99  
Killickham Lane Redcar,  
Cleveland

**Vic-20 for sale.** Vic 20 C2N  
cassette, much software and  
magazines. Quick sale \$90 CBM  
books, Machine Code Master  
\$5.50. The Working CBM64,  
\$4.50. The CBM64 Program Book,  
\$3.50. Games for the CBM64,  
\$3.50. Tel Northwich 782475

**CBM64 possible penal**  
warning for a 12 year old boy 1  
have more than 150 programs to  
swap. Send your list to Gisle  
Danielsson, Avenen 20, 4620  
Vagbygd, Norway

**Solutions to Scott Adams**  
adventures (1-5) \$1 each. Send  
list to Martin Wright "Alma"  
Glencann, Lampeter, Dyfed,  
Wales SA84 9RH, Tel 0570  
470362. Name solution required

**Swap Hackers** from the land  
down under want to swap  
software and info. Hundreds of  
good files. Send list to Nigel  
Rass PO Box 219 Morley 6062  
Perth WA, Australia

**CBM64 owner** has more than  
1200 prog and wants to swap  
them. Please send your list only  
of high quality software on disk  
to Leo Sauer, Via Trieste 27 I  
10143 Torino, Italy

**Home Accounts.** Put your house  
in order! Probably the best home  
use for your computer!  
Comprehensive coverage of  
bank accounts, credit cards, H.P.  
etc. Inbuilt accuracy check.  
Projects cashflow for any period  
ahead. Available for CBM64, Vic  
20 and Commodore 16. £8.45 or  
free details from Discus Software  
Preston Windmill Hill, Braham  
TQ5 9BR Tel 080 46 65632

**Vic-20 & CBM64** software for  
sale. All original, good prices,  
mostly UK, some USA. For large  
graded lists please send list to  
John Keogh, 30 Highwood  
Avenue Finchley London N12  
6SP

**Vic-20, C2N recorder.** Quickshot  
1 plus Commodore joystick,  
Scramble, Galaxian plus more  
games. 3x Superresponder,  
cartidge game book (Learn  
Computer Programming)  
manuals, customers £270  
Phone 01-471 7877 after 5pm

**Vic-20 only \$50** including  
cartridges and manuals. Versatile  
lot! RMAppack \$15. Eighteen  
original games and utilities \$15.  
Telephone Steve on Brentwood  
(0277) 213157 after 7pm

**CBM64, C2N cassette,** 1020  
printer, plotter, books, magazines,  
lots of software, v/c, set £360 or  
swap BBC, B with DFS Write A  
Simon of Kings Avenue Flint  
Chwyd CM6 5LS

**Graphic!-64, graphics/sprites**  
manual, pack-age for CBM64  
Unwired plotter, daily new  
commands, save pictures/tapes  
to tape. Send cheque to P.O.  
£10 David Innes 54 Sandhurst  
Road Tunbridge Wells Kent

**Vic-20 cassette C2N.** Super  
Expander 10k. Introduction to  
Basic 2. £50 worth software,  
books on graphics etc. All £150  
N Gilon, 123 Nicholson Street  
Edinburgh EH8 9ER Tel 031 667  
8363

**Yog Limited,** a strategy game for  
Commodore 64. You control  
a yoghurt making company.  
Features: sprites, sound and turbo  
load only \$2.80. Contact Ian 48  
Buckingham Road, Shekham,  
Sussex

**MP5 801 printer** brand new  
unused, unwanted, quick sale  
\$50 only 81 Harrow Drive,  
Edmonton N9 9EQ 01 807 1930  
evenings

**Vic-20, C2N, £60.** Stock Light  
Rifle, 3 games, £15. Stock  
Motherboard \$15. Programmer's  
Aid Cartridge \$10. Intro to Basic  
1, 2. Programmer's Reference  
Guide. \$5. Phone 0405 4313

**Vic-20 plus 16K, C2N** cassette  
unit and extensive software  
including four Jarnssoft titles only  
year old excellent condition can  
be sold separately \$65  
Interested? Ring Leesonfield  
Bucks (04948) 4630

**CBM64 software** to swap many  
titles including American  
Control Control Game 051 467 3262  
or 22 Dounstrey Mews, Bellevue,  
Liverpool L25 2TG. Especially  
interested in more American  
software

**CBM64 software** to exchange  
including many American titles.  
Ask only. Most interested in  
adventure games. Send your list  
to O. Bakomera Ryttsstrasse 21,  
4056 Basel Switzerland

**Vic-20 plus C2N** cassette deck,  
intro to Basic 1 many games  
boxed \$65 and Tel Brenthold  
(0277) 218602

**Vic-20 16K RAM** four cartridges  
including Galt Twenty one  
games including Right Path 737,  
Dungeons, Door Dungeons, all by  
Atari and more. Send your list  
to them. Sell for £120.00. Phone  
Couniton 452 after 6pm and ask  
for Ian

**Vic-20 8/16K Hi-Res** drawing  
(without Superresponder)  
170x100 pixels. Draw(mvc)  
point(mvc) circle, ellipse, spiral,  
triangle, square, joystick functions.  
Store drawings on tape. 1520  
printer and in memory (16k)  
Tape with machinecode routines,  
demo programs, sample  
drawings/maps, plus instructions  
for \$2.50 from A. Blomberg 134  
Aldersley Road, Maidenhead SL6  
7HE

# Ad - Index

Adamssoft	107	Level 9	68
Anger	89	Logic 3	36
Audiogenic	OBC	Melbourne House	42 & 43
BSF	41, 84	Micro de bug Consultancy	102
Beyond	81, 97	Microgen	26
Brother	IFC	Micromega	10
Bubble Bus	95	Micronet	74, 75, 76
Calco Software	88, 102	Midland Computer Library	102
Cheetah Marketing	5	Mirrorsoft	3
Chromasone Electronics	73	MPS	86
Consolidated Software	9	Munday & Roberts	86
Computarama	83	Muscaic	95, 101, 102
Creative Sparks	12, 33	New Generation Software	30, 31, 47
C&VG Book	34	Ocean Software	101
C & VG	97	Oxford Computer Systems	61
Digital Intergration	27	Paradox	63, 64, 65, 66
Doctor Soft	36	Precision Software	106
E & CM	82	Simple Software	101
Educational Computing	82	Software Library	86
Electronic Aids	89	Solar Software	25
Evesham Micros	107	Sophisticated Games	34
First Publishing	49	Stack	90, 91
Hago Products	19	Statesoft	4
Handic	78 & 79	Stonechip Electronics	67
Impex Designs	95	E4 Plus	88
Infrascope	89	Taskset	31BC
Interface	105	The Six Four Supplies Company	14
J & J Gilmore	101	The 64 Software Centre	50
Jansen Electronics	96	Ultimate	92
Jetsoft	51	Unisoft	86
John Wiley	18	US Gold	56, 57
K-Tel	17	Which Micro Book	34
Kuma Computers	112	Whutby Computers	46
Learning to Cope	97	Zoomsoft	86



**Commodore User** is published twelve times a year by EMAP Business and Computer Publications Ltd

**Subscriptions and Back Issues** are handled by SAT Subscription Services, Cowgate Works, Douglas Road, Tonbridge, Kent TN11 2TS. Telephone 0732 351215.

**Annual subscription** (Auk) £12.00 (Else) \$19.00 (Europe) \$18.00 (Rest of the World) \$32.00

Printed by Garrod & Liffhouse Ltd, Crawley. Photooffsetting by PDR, London N10. Telephone 01 444 0359. Reproduction by Eikon Litho Ltd, London EC2. Distributed by Associated Newspapers.

**Material is accepted on an 'all rights' basis unless otherwise agreed. Enclose SAE if you want the return of original manuscripts and photographs.**

**All material** is copyright Commodore User 1984 and contributors. No part of this issue may be reproduced in any form without the prior consent in writing of the publisher other than that exempted quoted for the purposes of review and duly credited. The publisher does not necessarily agree with the views expressed by contributors and assume no responsibility for errors in reproduction or interpretation in the subject matter of this magazine or any material arising therefrom.

(ISSN 0266-721X)





# CAD CAM

WARRIOR

commodore



£9.95

# Alice IN VIDEOLAND



**NOW  
ON  
CASSETTE!**

## PURE MAGIC!

Join Alice in her journey through Videoland - an enchanted place populated by strange creatures such as bread-and-butterflies and pipe-smoking caterpillars; where little girls change size and flamingos turn into croquet mallets!

Alice in Videoland is a revolutionary new concept in entertainment for the Commodore 64, incorporating some of the finest graphics ever seen on any home computer, accompanied by a charming musical score. There are four different game scenes involved, and your performance in earlier ones will affect your ability to get through later ones and determine your eventual total score.

**Scene One** - Stunning title page graphics give way to the first game scene as Alice falls into the rabbit's warren. Score points for collecting the objects to be found there - including keys to open doors, bottles to make her smaller, cakes to make her bigger!

**Scene Two** - Out in the garden the Cheshire cat looks on as Alice meets the pipe-smoking caterpillar. Help her to catch the bread-and-butterflies and the rocking-horse flies that change into the balls used in the croquet game in the last scene!

**Scene Three** - Alice is a pawn in the chess game where her opponents are the Jabberwocky and Tweedledum and Tweedledee. Help her across the board by protecting her with your White Knights!

**Scene Four** - The most bizarre croquet game ever! Help Alice hit the balls through the playing-card-soldier hoops before the Queen of Hearts stomps on them!

Alice in Videoland is available for the Commodore 64 on disk - £12.95, and now on cassette - £8.95.

Alice in Videoland features graphics created with the Koala Pad.

**Audiogetic LTD**

P.O. BOX 88, READING, BERKS

SEND FOR **FREE** COLOUR CATALOGUE!